ORDER NO. RD82065290A2

Service Manual

FM-LW-MW-SW
Stereo Radio Cassette Recorder

Radio Cassette
RX-F20L

Please use this manual together with the service manual for model No. RX-F20L, order No. 82065279C2.

CHANGES

■ REPLACEMENT PARTS LIST

Ref. No.	Change of Part No.		Description	Per Set	Remarks	Price
	RX-F20L ➡	RX-F20L (RD82065290A2)				
K1	RYMXF20LXG2	———	Remove			
K1	RYMXF20LXG1	RYMXF20LXGZ1	Front Cabinet Ass'y (Metallic Brown)	1		
K1-1	RYHXF20N2	———	Remove			
K2	RYFXF20LXG2	———	Remove			
K2	RYFXF20LXG1	RYFXF20LXGZ1	Rear Cabinet Ass'y (Metallic Brown)	1		
K2-1	RJB2009Z2	———	Remove			
K4	RYNXF20N2	———	Remove			
E1	RKE404Z2	———	Remove			
E11	RZA1XF20N2	———	Remove			

Panasonic

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

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Printed in Japan

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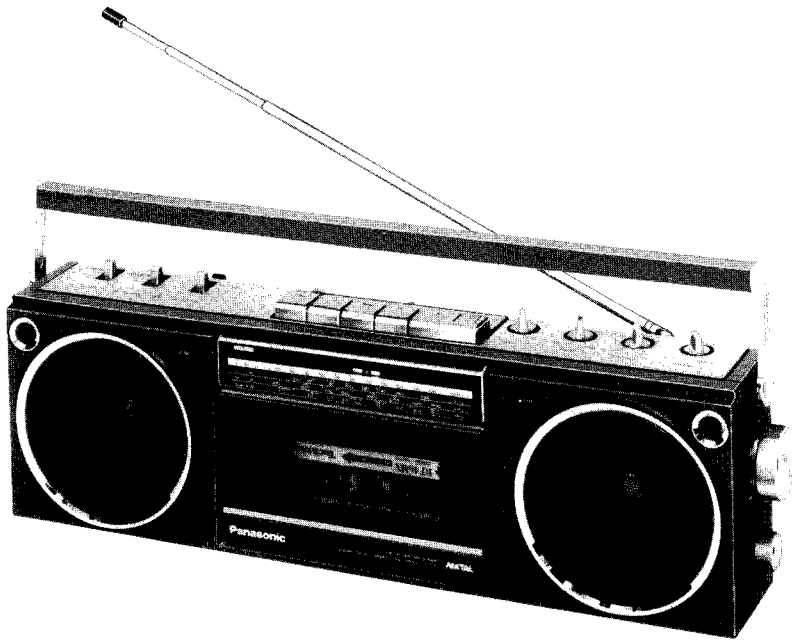
Radio Cassette

RX-F20L

FM-LW-MW-SW Stereo Radio Cassette Recorder



■ SPECIFICATIONS

General:

Power Requirement:	Battery; 9V (Six, "C" Size dry Batteries) (National UM-2 or equivalent)
	AC; 220V/50Hz with AC adaptor
	Car battery; with optional car adaptor RP-917
Power Consumption:	AC Adaptor only (10W)
Power Output:	7W (3.5W×2)...RMS (max.)
	7W (3.5W×2)...MPO (music)
Speaker:	10cm (4") PM Dynamic Speaker (3Ω)
Input:	MIC; sensitivity 0.25mV/applicable microphone impedance 200~600Ω
	DC IN; 9V
Output:	EXT SP; 3Ω~8Ω
	HEADPHONES; 320mW/32Ω
REC/P.B Connection:	5P DIN type IN; 0.27mV/2.7kΩ
	OUT; 420mV/470kΩ
Dimensions:	400mm(W)×127mm(H)×96mm(D) ($15^{3}/_{4}$"×5"×$3^{25}/_{32}$")
Weight:	1.95kg (4 lb. 5 oz) without batteries

Radio Section:

Radio Frequency Range:	FM; 87.5~108MHz
	LW; 150~285kHz (2000~1060m)
	MW; 520~1610kHz (577~186m)
	SW; 5.9~18MHz (50.8~16.7m)
Intermediate Frequency:	FM; 10.7MHz
	AM; 455kHz (LW, MW, SW)
Sensitivity:	FM; 2.2μV/50mW output
	LW; 250μV/m/50mW output
	MW; 158μV/m/50mW output
	SW; 15μV/50mW output

Tape Deck Section:

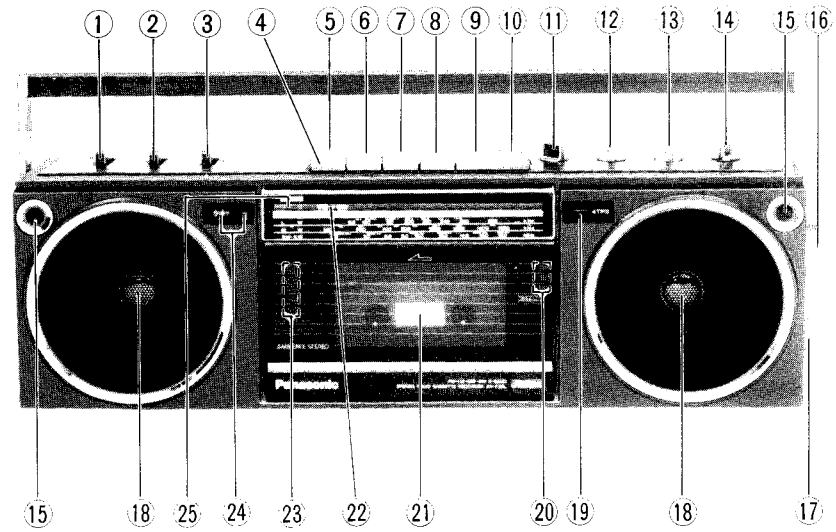
Frequency Response:	90~10,000Hz (with normal tape)
	60~10,000Hz (with CrO_2 tape)
	60~12,000Hz (with Metal tape)
Recording System:	AC bias, AC erase
Tape Speed:	4.8cm/s, ($1^{7}/_{8}$ ips)
Wow and Flutter:	0.3% (WRMS)
Program Time:	1 hour with C-60 cassette tape
Track System:	4-track 2 channel stereo recording and playback

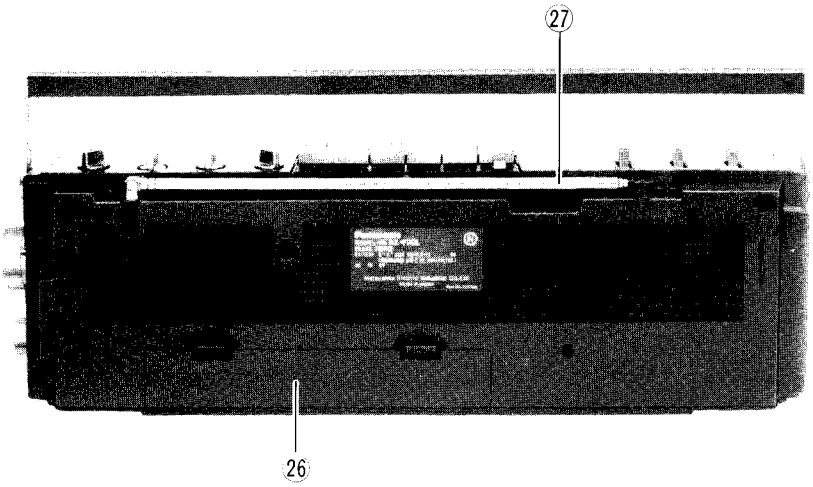
Specifications are subject to change without notice.

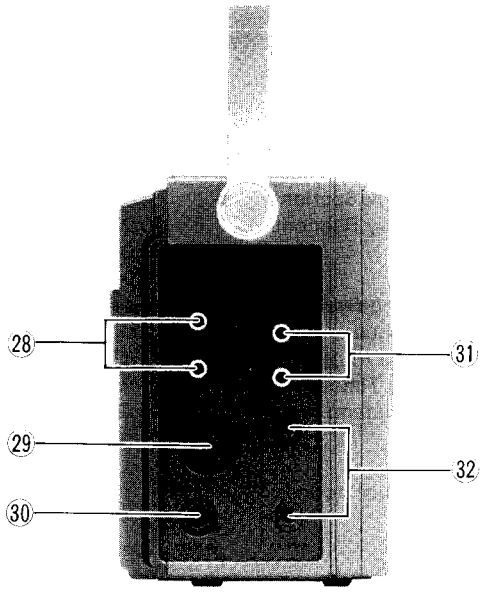
Panasonic

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

LOCATION OF CONTROLS AND COMPONENTS







[Fig. 1]

1. Tape Selector (METAL/CrO_2/NORMAL)
2. Mode Selector/Beat Proof Switch (AMBIENCE, III/STEREO, II/MONO, I)
3. Function Selector (SLEEP/RADIO/TAPE)
4. Pause/Eject Button (PAUSE/EJECT)
5. Record Muting Button (REC MUT)
6. Stop Button (STOP)
7. Fase Forward Button (FF)
8. Rewind Button (REW)
9. Playback Button (PLAY)
10. Record Button (REC)
11. Band Selector (FM/LW/MW/SW)
12. Tone Control (TONE)
13. Balance Control (BALANCE)
14. Volume Control (VOLUME)
15. Built-in Microphones (MIC, L Rch)
16. Tuning Control (TUNING)
17. Fine Tuning Control (FINE TUNING)
18. Built-in Speakers (L, Rch) 10cm (4") 3Ω
19. TPS Button (TPS)
20. TPS Indicator (TPS)
21. Cassette Compartment
22. Tuning Indicator
23. Level Meter (LEVEL/POWER)
24. Tape Counter and Reset Button (COUNTER)
25. FM Stereo Indicator (FM Stereo)
26. Battery Compartment
27. Telescopic Antenna
28. Microphone Jacks (MIC) 0.25mV, 200~600Ω
29. DIN Jack IN 0.27mV/2.7kΩ, out 420mV/470kΩ
30. DC IN Jack (DC IN 9V, ⊖-●-⊕)
31. External Speaker Jacks (EXT SP IMP 3~8Ω)
32. Headphone Jacks (PHONES 1, 2) 320mW/32Ω

RX-F20L DEUTSCH

■ TECHNISCHE DATEN

Allgemeines:

Stromversorgung:	Wechselstrom: 220V/50Hz Batterien: 9V (sechs trockenbatterien der Größe "D": National UM-2 o.ä.) Autosbatterie: über den Autosadapter RP-917 (Sonderzubehör) anschließbar
Leistungsaufnahme:	10W (bei Netzbetrieb)
Ausgangsleistung:	max. 7W (2×3,5W) eff.
Lautsprecher:	Tieftonlautsprecher: dynamischer PM-Lautsprecher, ø10cm (3Ω)
Eingangsspannungen:	MIC: Empfindlichkeit 0,25mV, Mikrofon-impedanz 200~600Ω DC IN: 9V EXT SP: 3~8Ω HEADPHONES: 320mW/32Ω
REC/PB-Anschlußbuchse:	5-polige DIN-Buchse IN: Empfindlichkeit 0,27mV/mind. 2,7kΩ OUT: Ausgangspegel 420mV/max. 470kΩ
Abmessungen (B×H×T):	400×127×96mm
Gewicht (ohne Batterien):	1,95kg

Empfangsteil:

Wellenbereiche:	UKW: 87,5~108MHz LW: 150~285kHz (2000~1060m) MW: 520~1610kHz (577~186m) KW: 5,9~18MHz (50,8~16,7m)
Zwischenfrequenz:	UKW: 10,7MHz LW/MW/KW: 455kHz
Empfindlichkeit:	UKW: 2μV bei 50mW Ausgangsleistung LW: 250μV/m bei 50mW Ausgangsleistung MW: 158μV/m bei 50mW Ausgangsleistung KW: 15μV bei 50mW Ausgangsleistung

Tonbandteil:

Frequenzgang:	90~10.000Hz (Normalband) 60~14.000Hz (CrO_2-Band) 60~16.000Hz (Reineisenband)
Aufnahmesystem:	Wechselstrom-Vormagnetisierung, Wechselstromlöschung
Bandgeschwindigkeit:	4,8cm/s
Gleichlaufschwankungen:	0,3% bewertet (WRMS)
Spieldauer:	1 Stunde mit Cassette C-60
Spurlage:	Stereoaufnahme und -wiedergabe auf 4 Spuren/2 Kanälen

Änderungen vorbehalten.

BEZEICHNUNGEN IN DER SCHEMATISCHEN DA RSTELLUNG

Bemerkungen:

1. S1-1~S1-10 ...Aufnahme-/Wiedergabeschalter auf „Wiedergabe". (1...Wiedergabeschalter, 3...Aufnahme).
2. S2-1~S2-4 ...Funktionsschalter auf „TAPE". (1 = TAPE, 2 = RADIO, 3 = SLEEP).
3. S3-1~S3-4 ...Betriebsart- / stooronder drukkings knop auf „AMBIENCE/III". (1 = MONO/I, 2 = STEREO/II, 3 = AMBIENCE/III).
4. S4-1~S4-4 ...Bandsortenwähler auf „NORMAL". (1 = NORMAL, 2 = CrO_2, 3 = METAL).
5. S5-1~S5-8 ...Wellenbereichsschalter auf „FM". (1 = FM, 2 = LW, 3 = MW, 4 = SW).
6. S6-1, S6-2.....Leeraufnahmeschalter auf „OFF".
7. S7 .....TPS-Programmschalter.
8. S8-1~S8-3 ...DIN-Schalter auf „OFF". (1...ON, 3...OFF)
9. S9 .....Wiedergabetaste auf „OFF".
10. S10 .....EIN/AUS-Schalter des Motors auf „OFF".
11. S11 .....Schnellvorlauf-, Rückspultaste auf „OFF".
12. VR1 .....Einstellung der spannungsgesteuerten Oszillatorfrequenz.
13. VR101 .....Balanceregler.
14. VR102 .....Klangregler.
15. VR103 .....Lautstärkeregler.
16. VR105 .....Spannungsregler zur Einstellung des Vormagnetisierstroms.
17. Die Markierung (▼) bezeichnet einen Meßpunkt, z.B. ▼= Meßpunkt 1.
18. Alle Gleichspannungen sind mit einem Elektronikvoltmeter vom negativen Batterieanschluß aus zu messen. < >...Stellung „FM", ( )...Stellung „AM", [ ]...Stellung „Aufnahme".
19. Batteriestrom: ohne Signal.....96mA
    bei maximaler Ausgangsleistung (Radio).....700mA
    bei maximaler Ausgangsleistung (Cassette) 840mA

ABGLEICH

■ VORGANGSWEISE BEIM ABGLEICH

BITTE DIESEN ABSCHNITT VOR DEM ABGLEICH SORGFÄLTIG DURCHLESEN

1. Den Lautstärkeregler in die Maximalposition stellen.
2. Den Klangregler in die Höhenposition stellen.
3. Den Wellenbereichsschalter auf LW, MW, KW oder UKW stellen.
4. Den Balanceregler in die Mittelposition stellen.
5. Den Funktionsschalter auf „radio" stellen.
6. Drehen Sie den Feinabstimmregler in die Mittelstellung.
7. Eine Gleichspannung von 9V anlegen.
8. Der Signalgeneratorausgang sollte nicht größer sein, als für eine Ausgangsanzeige unbedingt notwendig ist.

■ LW-, MW- und KW-ABGLEICH

	WELLENBAND	SIGNALGENERATOR oder WOBBELGENERATOR: ANSCHLÜSSE	SIGNALGENERATOR oder WOBBELGENERATOR: FREQUENZ	STELLUNG DES ABSTIMMREGLERS	MESSGERÄT (ELEKTRONIK-VOLTMETER oder OSZILLOSKOP)	ABGLEICH	BEMERKUNGEN
		AM-ZF-ABGLEICH					
(1)	MW	Aus einem Draht einige Schleifenwindungen bilden und das Signal in die Empfängerschleife abstrahlen.	455kHz, 30% mod. (Modulationsfrequenz 400Hz)	Der Abstimmpunkt, wo keine Interferenz auftritt (ungefähr bei 600kHz.)	Ausgangsleistungsmesser parallel zur Lautsprecher-Schwingspule.	T3 (1. AM-ZF-Abgleich) T4 (2. AM-ZF-Abgleich)	Die maximale Ausgangsleistung einstellen.
		LW-HF-ABGLEICH					
(2)	LW	〃	145kHz	145kHz [9,5mm]	Ausgangsleistungsmesser parallel zur Lautsprecher-Schwingsuple.	L7 (LW-Oszillatorspule) (*1) L4 (LW-Antennenspule)	Die maximale Ausgangsleistung einstellen. L4 durch Verschieben am abgleichen.
(3)	LW	〃	285kHz	285kHz [80,69mm]	〃	CT5 (LW-Oszillatortrimmer) CT3 (LW-Antennentrimmer)	Die maximale Ausgangsleistung einstellen. Die Schritte (2) und (3) wiederholen.
		(*1) Nach beendetem Abgleich ist der Antennenspulenkörper mit Wachs zu befestigen.					
		MW-HF-ABGLEICH					
(4)	MW	〃	550kHz	550kHz [9,5mm]	Ausgangsleistungsmesser parallel zur Lautsprecher-Schwingspule.	L8 (MW-Oszillatorspule) (*2) L5 (MW-Antennenspule)	Die maximale Ausgangsleistung einstellen. L5 durch Verschieben am Ferritkern abgleichen.
(5)	MW	〃	1.500kHz	1.500kHz [80,69mm]	〃	CT6 (MW-Oszillatortrimmer) CT4 (MW-Antennentrimmer)	Die maximale Ausgangsleistung einstellen. Die Schritte (4) und (5) wiederholen.
		(*2) Nach beendetem Abgleich ist der Antennenspulenkörper mit Wachs zu befestigen.					
		KW-HF-ABGLEICH					
(6)	KW	Über einen Keramikkondensator (10pF) an den Meßpunkt ▼1 anschließen. Den negativen Ausgang an den Meßpunkt ▼2 anschließen.	5,9MHz	5,9MHz [3,36mm]	Ausgangsleistungsmesser parallel zur Lautsprecher-Schwingspule.	L9 (KW-Oszillatorspule) L6 (KW-Antennenspule)	Die maximale Ausgangsleistung einstellen.
(7)	KW		18MHz	18MHz [85,34mm]	〃	CT8 (KW-Antennentrimmer)	Die maximale Ausgangsleistung einstellen. Die Schritte (6) und (7) wiederholen.

■ UKW-ABG

	WELLENBAND	
(1)	UKW	Üb Ko Me ans De Au Me ans
(2)	UKW	
(3)	UKW	Üb UK der ans De Au Me ans
(4)	UKW	

(*3) Es gi

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ABGLEICH

■ VORGANGSWEISE BEIM ABGLEICH

BITTE DIESEN ABSCHNITT VOR DEM ABGLEICH SORGFÄLTIG DURCHLESEN

1. Den Lautstärkeregler in die Maximalposition stellen.
2. Den Klangregler in die Höhenposition stellen.
3. Den Wellenbereichsschalter auf LW, MW, KW oder UKW stellen.
4. Den Balanceregler in die Mittelposition stellen.
5. Den Funktionsschalter auf „radio" stellen.
6. Drehen Sie den Feinabstimmregler in die Mittelstellung.
7. Eine Gleichspannung von 9V anlegen.
8. Der Signalgeneratorausgang sollte nicht größer sein, als für eine Ausgangsanzeige unbedingt notwendig ist.

■ LW-, MW- und KW-ABGLEICH

	WELLENBAND	SIGNALGENERATOR oder WOBBELGENERATOR ANSCHLÜSSE	SIGNALGENERATOR oder WOBBELGENERATOR FREQUENZ	STELLUNG DES ABSTIMMREGLERS	MESSGERÄT (ELEKTRONIKVOLTMETER oder OSZILLOSKOP)	ABGLEICH	BEMERKUNGEN
			AM-ZF-ABGLEICH				
(1)	MW	Aus einem Draht einige Schleifenwindungen bilden und das Signal in die Empfängerschleife abstrahlen.	455kHz, 30% mod. (Modulationsfrequenz 400Hz)	Der Abstimmpunkt, wo keine Interferenz auftritt (ungefähr bei 600kHz.)	Ausgangsleistungsmesser parallel zur Lautsprecher-Schwingspule.	T3 (1. AM-ZF-Abgleich) T4 (2. AM-ZF-Abgleich)	Die maximale Ausgangsleistung einstellen.
			LW-HF-ABGLEICH				
(2)	LW	〃	145kHz	145kHz [9,5mm]	Ausgangsleistungsmesser parallel zur Lautsprecher-Schwingsuple.	L7 (LW-Oszillatorspule) (*1) L4 (LW-Antennenspule)	Die maximale Ausgangsleistung einstellen. L4 durch Verschieben am abgleichen.
(3)	LW	〃	285kHz	285kHz [80,69mm]	〃	CT5 (LW-Oszillatortrimmer) CT3 (LW-Antennentrimmer)	Die maximale Ausgangsleistung einstellen. Die Schritte (2) und (3) wiederholen.
	(*1) Nach beendetem Abgleich ist der Antennenspulenkörper mit Wachs zu befestigen.						
			MW-HF-ABGLEICH				
(4)	MW	〃	550kHz	550kHz [9,5mm]	Ausgangsleistungsmesser parallel zur Lautsprecher-Schwingspule.	L8 (MW-Oszillatorspule) (*2) L5 (MW-Antennenspule)	Die maximale Ausgangsleistung einstellen. L5 durch Verschieben am Ferritkern abgleichen.
(5)	MW	〃	1.500kHz	1.500kHz [80,69mm]	〃	CT6 (MW-Oszillatortrimmer) CT4 (MW-Antennentrimmer)	Die maximale Ausgangsleistung einstellen. Die Schritte (4) und (5) wiederholen.
	(*2) Nach beendetem Abgleich ist der Antennenspulenkörper mit Wachs zu befestigen.						
			KW-HF-ABGLEICH				
(6)	KW	Über einen Keramikkondensator (10pF) an den Meßpunkt ① anschließen. Den negativen Ausgang an den Meßpunkt ② anschließen.	5,9MHz	5,9MHz [3,36mm]	Ausgangsleistungsmesser parallel zur Lautsprecher-Schwingspule.	L9 (KW-Oszillatorspule) L6 (KW-Antennenspule)	Die maximale Ausgangsleistung. einstellen.
(7)	KW		18MHz	18MHz [85,34mm]	〃	CT8 (KW-Antennentrimmer)	Die maximale Ausgangsleistung einstellen. Die Schritte (6) und (7) wiederholen.

■ UKW-ABGLEICH

	WELLENBAND	SIGNALGENERATOR oder WOBBELGENERATOR ANSCHLÜSSE	SIGNALGENERATOR oder WOBBELGENERATOR FREQUENZ	STELLUNG DES ABSTIMMREGLERS	MESSGERÄT (ELEKTRONIKVOLTMETER oder OSZILLOSKOP)	ABGLEICH	BEMERKUNGEN
			UKW-ZF-ABGLEICH				
(1)	UKW	Über einen 0,001μF-Kondensator an den Meßpunkt ③ anschließen. Den negativen Ausgang an den Meßpunkt ② anschließen.	10,7MHz (SWP.)	Der Abstimmpunkt, wo keine Interferenz auftritt (ungefähr bei 90MHz).	Die Vertikalamplitude des Oszilloskops an den Meßpunkt ④ anschließen. Den negativen Ausgang an den Meßpunkt ⑤ anschließen.	T1 (UKW-ZF-Abgleich)	Die Maximalamplitude einstellen. (Siehe Abb. 13.)
(2)	UKW	〃	〃	〃	〃	T3 (UKW-ZF-Abgleich)	Die Maximalamplitude einstellen. (Siehe Abb. 14.)
			UKW-HF-ABGLEICH				
(3)	UKW	Über eine künstliche UKW-Antenne an den Meßpunkt ① anschließen. Den negativen Ausgang an den Meßpunkt ② anschließen.	90MHz	90MHz [11,03mm]	Ausgangsleistungsmesser parallel zur Lautsprecher-Schwingspule.	L3 (UKW-Oszillatorspule) L2 (UKW-Abstimmspule)	(*3) Die maximale Ausgangsleistung einstellen.
(4)	UKW		106MHz	106MHz [75,81mm]	〃	CT2 (UKW-Oszillatortrimmer CT1 (UKW-Abstimmtrimmer)	(*3) Die maximale Ausgangsleistung einstellen. Die Schritte (3) bis (4) wiederholen.
	(*3) Es gibt drei verschiedene Ausgangsfrequenzkurven. Stimmen Sie die Mittelfrequenz ab.						

■ KANAL TRENNUNGSABGLEICH

PRÜFUNG	UKW-MESSENDER SOURCE-ANSCHLUSS	GERÄTEANSCHLUSS (ELEKTRONISCHER ZÄHLER)	EINSTELLUNG	ANGABEN	BEMERKUNGEN
Einstellung des Pilottons	98MHz, 60dB	⑥ ...(+) ⑦ ...(−)	VR1	19kHz	Mit dem elektronischen Zähler den Spannungskonstanthalter (VR1) auf 19kHz (±0,1Hz) einstellen.

■ AUDIO-ABGLEICH

EINSTELLUNG	EINGANG	MESSPUNKT	MESSWERT	EINSTELLPUNKT	BEMERKUNGEN
Azimut	QZZCFM (8kHz, −20dB)	EXT SP	Die maximale Ausgangsleistung einstellen.	Azimut-Einstellschraube	bei Wiedergabe
Oszillationsfrequenz für Vormagnetisierung	——	⑩ ...(+) ⑪ ...(−)	70±0,5kHz	L301	bei Aufnahme: Oszillator → I Bandsortenwähler... Reineisen
Vormagnetisierungsstrom	für Reineisenband	⑩① ... + (linker Kanal) ⑩② ... − (linker Kanal) ⑳① ... + (rechter Kanal) ⑳② ... − (rechter Kanal)	Reineisen 950±100μA CrO_2 650±100μA Normal 470±100μA	VR105	bei Aufnahme: Oszillator → I Bandsortenwahler... Reineisen

RX-F20L FRANÇAIS

■ SPECIFICATIONS

Généralités:

Alimentation:	c.a. 220V/50Hz Piles: 9V (six piles sèches de dimension D) (National UM-2 ou équivalent) Batteries pour automobile: avec adaptateur RP-917 automobile en option
Consommation:	10W (C.A. seulement)
Puissance de sortie:	7W (3,5W×2)...RMS (max.)
Enceinte acoustique:	Haut-parleur des graves: haut-parleur dynamique 10cm à aimant fixe (3Ω)
Entrée:	MIC: sensibilité 0,25mV: impédance applicable pour microphone 200 à 600Ω DC IN: 9V EXT SP: 3 à 8Ω HEADPHONE: 320mW/32Ω
Branchement REC/PB:	fiche DIN à 5 broches: IN: sensibilité 0,27mV/2,7kΩ ou plus OUT: sortie 420mV/470kΩ ou moins OUT: variable
Dimensions (l×h×Pr)cm:	400×127×96 ($15^{3}/_{4}$×5×$3^{25}/_{32}$)"
Poids kg:	1,95 sans piles

Section radio:

Gamme de fréquence radio:	FM: 87,5 à 108MHz GO: 150 à 285kHz (2000 à 1060m) PO: 520 à 1610kHz (577 à 186m) OC: 5,9 à 18MHz (50,8 à 16,7m)
Fréquence intermédiaire:	FM: 10,7MHz AM (GO/PO/OC): 455kHz
Sensibilité:	FM: 2μV pour une sortie de 50mW GO: 250μV/m pour une sortie de 50mW PO: 158μV/m pour une sortie de 50mW OC: 15μV pour une sortie de 50mW

Section platine magnétophone:

Réponse de fréquence:	90 à 10.000Hz (avec bande normale) 60 à 10.000Hz (avec bande CrO_2) 60 à 12.000Hz (avec bande Métal)
Systéme d'enregistrement:	Polarisation C.A., effacement C.A.
Vitesse de bande:	4,8cm/sec.
Pleurage et scintillement:	0.3% (WRMS)
Durée de lecture:	1 heure avec cassette C-60
Pistes:	Enregistrement et lecture stéréo 4 pistes, 2 canaux

Ces spécifications sont sujettes à des changements sans préavis.

SYMBOLES UTILISES DANS LE SCHEMA

Remarques:

1. S1-1~S1-10...Commutateur enregistrement/lecture en position "playback". (1...Playback, 3...Record).
2. S2-1~S2-4 ...Commutateur de fonction en position "TAPE". (1..."TAPE", 2..."RADIO", 4..."SLEEP").
3. S3-1~S3-4 ...Commutateur de stéréo-mono/anti-battements en position "AMBIENCE/III". (1..."MONO/I", 2..."STEREO/II", 3..."AMBIENCE/III").
4. S4-1~S4-4 ...Sélecteur de bande en position "NORMAL". (1..."NORMAL", 2..."CrO_2", 3..."METAL").
5. S5-1~S5-8 ...Sélecteur de gamme d'onde en position "FM". (1..."FM", 2..."LW", 3..."MW", 4..."SW").
6. S6-1, S6-2 ...Interrupteur "ON/OFF" du commutateur d'enregistrement silencieux en position "OFF".
7. S7 .....Commutateur de TPS.
8. S8-1~S8-3 ...Commutateur "DIN ON/OFF" en position "OFF". (1...ON, 3...OFF).
9. S9 .....Commutateur "ON/OFF" du commutateur lecture en position "OFF".
10. S10 .....Commutateur "ON/OFF" du moteur en position "OFF".
11. S11 .....Touch "ON/OFF" du commutateur davance rapiderebobinage en position "OFF".
12. VR1 .....Réglage de fréquence de l'oscillateur VCO.
13. VR101 .....Commande de balance.
14. VR102 .....Commande de tonalité.
15. VR103 .....Potentiomètre de volume.
16. VR105 .....Régulateur de tension de réglage du courant de polarisation.
17. La marque (▼) signale un point de vérification. Ex.:▼1=point de vérification 1.
18. La tension C.C. est mesurée au moyen d'un voltmètre électronique à partir de la borne négative de la pile.
    < >...Position FM, ( )...Position AM,
    [ ]...Position Enregistrement.
19. Courant des piles: Pas de signal 96mA
    Sortie maximum (Radio) 700mA
    Sortie maximum (Bande)..... 840mA

ALIGNEMENTS

■ INSTRUCTIONS D'ALIGNEMENT

AVANT DE PROCEDER AUX ALIGNEMENTS, LIRE ATTENTIVEMENT CE QUI SUIT

1. Placer le potentiomètre de volume au maximum.
2. Placer le commande de tonalite sur aigus.
3. Placer le sélecteur de bande sur GO, PO, OC ou FM.
4. Placer la commande de balance au centre.
5. Placer le sélecteur de fonctions sur "radio".
6. Placer la commande de syntonisation fine sur sa position centrale.
7. Régler la tension sur 9V C.C.
8. Régler la sortie du générateur étalonné de façon à ne pas surcharger les circuits.

■ ALIGNEMENT GO, PO, et OC

	BANDE	GENERATEUR ETALONNE ou GENERATEUR DE BALAYAGE		POSITION DE L'AIGUILLE SUR LE CADRAN	INDICATEUR (VOLTMETER ou OSCILLOSCOPE ELECTRO-NIQUES)	REGLAGE	OBSERVATIONS
		BRANCHEMENTS	FREQUENCE				
		ALIGNEMENT IF sur AM					
(1)	PO	Faire une boucle de plusieurs tours de fil et émettre ls signal dans la boucle du récepteur.	455kHz (modulation de 30% à 400Hz)	Point de non-interférence. (à/environ 600kHz)	Voltmètre branché à la bobine oscillatrice.	T3 (AM 1ère IFT) T4 (AM 2ème IFT)	Régler pour une sortie maximum.
		ALIGNEMENT HF sur GO					
(2)	GO	〃	145kHz	145kHz [9,5mm ($^{3}/_{8}$")]	Voltmètre branché à la bobine oscillatrice.	L7 (bobine d'oscillateur GO) (*1) L4 (bobine d'antenne GO)	Régler pour une sortie maximum en glissant la bobine L4 le long du noyau en ferrite.
(3)	GO	〃	285kHz	285kHz [80,69mm ($3^{3}/_{16}$")]	〃	CT5 (trimmer d'oscillateur GO) CT3 (trimmer d'antenne GO)	Régler pour une sortie maximum. Refaire les étapes (2) et (3).
	(*1) Sceller la bobine d'antenne à la cire après avoir achevé l'alignement.						
		ALIGNEMENT HF sur PO					
(4)	PO	〃	550kHz	550kHz [9,5mm ($^{3}/_{8}$")]	Voltmètre branché à la bobine oscillatrice.	L8 (bobine d'oscillateur PO) (*2) L5 (bobine d'antenne PO)	Régler pour une sortie maximum en glissant la bobine L5 le long du noyau en ferrite.
(5)	PO	〃	1.500kHz	1.500kHz [80,69mm ($3^{3}/_{16}$")]	〃	CT6 (trimmer d'oscillateur PO) CT4 (trimmer d'antenne PO)	Régler pour une sortie maximum. Refaire les étapes (4) et (5).
	(*2) Sceller la bobine d'antenne à la cire après avoir achevé l'alignement.						
		ALIGNEMENT HF sur OC					
(6)	OC	Brancher au point ▼2 par un condensateur en céramique (10pF) Côté négatif au point ▼2.	5,9MHz	5,9MHz [3,36mm ($^{1}/_{8}$")]	Voltmètre branché à la bobine oscillatrice.	L9 (bobine d'oscillateur OC) L6 (bobine d'antenne OC)	Régler pour une sortie maximum.
(7)	OC		18MHz	18MHz [85,34mm ($3^{11}/_{32}$")]	〃	CT8 (trimmer d'antenne OC)	Régler pour une sortie maximum. Refaire les étapes (6) et (7).

■ ALIGNEMEN

	BANDE	GE GE
		BRA
(1)	FM	Bran ▼2 Côté point
(2)	FM	
(3)	FM	Bran ▼1 ante FM. au p
(4)	FM	

(*3) Il y aura

■ ALIGNEMEN

ELEMENT
Réglage du signal pilote.

■ ALIGNEMEN

ELEMENT
Azimuth
Fréquence d'oscillation d
polarisation
Courant de polarisation

ALIGNEMENTS

■ INSTRUCTIONS D'ALIGNEMENT

AVANT DE PROCEDER AUX ALIGNEMENTS, LIRE ATTENTIVEMENT CE QUI SUIT

1. Placer le potentiomètre de volume au maximum.
2. Placer le commande de tonalite sur aigus.
3. Placer le sélecteur de bande sur GO, PO, OC ou FM.
4. Placer la commande de balance au centre.
5. Placer le sélecteur de fonctions sur "radio".
6. Placer la commande de syntonisation fine sur sa position centrale.
7. Régler la tension sur 9V C.C.
8. Régler la sortie du générateur étalonné de façon à ne pas surcharger les circuits.

■ ALIGNEMENT GO, PO, et OC

	BANDE	GENERATEUR ETALONNE ou GENERATEUR DE BALAYAGE		POSITION DE L'AIGUILLE SUR LE CADRAN	INDICATEUR (VOLTMETER ou OSCILLOSCOPE ELECTRONIQUES)	REGLAGE	OBSERVATIONS
		BRANCHEMENTS	FREQUENCE				
	ALIGNEMENT IF sur AM						
(1)	PO	Faire une boucle de plusieurs tours de fil et émettre ls signal dans la boucle du récepteur.	455kHz (modulation de 30% à 400Hz)	Point de non-interférence. (à/environ 600kHz)	Voltmètre branché à la bobine oscillatrice.	T3 (AM 1ère IFT) T4 (AM 2ème IFT)	Régler pour une sortie maximum.
	ALIGNEMENT HF sur GO						
(2)	GO	〃	145kHz	145kHz [9,5mm ($^3/_8$")]	Voltmètre branché à la bobine oscillatrice.	L7 (bobine d'oscillateur GO) (*1) L4 (bobine d'antenne GO)	Régler pour une sortie maximum en glissant la bobine L4 le long du noyau en ferrite.
(3)	GO	〃	285kHz	285kHz [80,69mm ($3^3/_{16}$")]	〃	CT5 (trimmer d'oscillateur GO) CT3 (trimmer d'antenne GO)	Régler pour une sortie maximum. Refaire les étapes (2) et (3).
	(*1) Sceller la bobine d'antenne à la cire après avoir achevé l'alignement.						
	ALIGNEMENT HF sur PO						
(4)	PO	〃	550kHz	550kHz [9,5mm ($^3/_8$")]	Voltmètre branché à la bobine oscillatrice.	L8 (bobine d'oscillateur PO) (*2) L5 (bobine d'antenne PO)	Régler pour une sortie maximum en glissant la bobine L5 le long du noyau en ferrite.
(5)	PO	〃	1.500kHz	1.500kHz [80,69mm ($3^3/_{16}$")]	〃	CT6 (trimmer d'oscillateur PO) CT4 (trimmer d'antenne PO)	Régler pour une sortie maximum. Refaire les étapes (4) et (5).
	(*2) Sceller la bobine d'antenne à la cire après avoir achevé l'alignement.						
	ALIGNEMENT HF sur OC						
(6)	OC	Brancher au point ▼1 par un condensateur en céramique (10pF) Côté négatif au point ▼2.	5,9MHz	5,9MHz [3,36mm ($^1/_8$")]	Voltmètre branché à la bobine oscillatrice.	L9 (bobine d'oscillateur OC) L6 (bobine d'antenne OC)	Régler pour une sortie maximum.
(7)	OC		18MHz	18MHz [85,34mm ($3^{11}/_{32}$")]	〃	CT8 (trimmer d'antenne OC)	Régler pour une sortie maximum. Refaire les étapes (6) et (7).

■ ALIGNEMENT FM

	BANDE	GENERATEUR ETALONNE ou GENERATEUR DE BALAYAGE		POSITION DE L'AIGUILLE SUR LE CADRAN	INDICATEUR (VOLTMETER ou OSCILLOSCOPE ELECTRONIQUES)	REGLAGE	OBSERVATIONS
		BRANCHEMENTS	FREQUENCE				
	ALIGNEMENT IF sur FM						
(1)	FM	Brancher au point ▼3 via 0,001μF. Côté négatif au point ▼2.	10,7MHz (SWP.)	Point de non-interférence. (à/environ 90MHz)	Brancher la sonde vert. de l'oscilloscope au point ▼4. Côté négatif au point ▼5.	T1 (FM 1ère IFT)	Régler pour une amplitude maximum. (Voir fig. 13.)
(2)	FM	〃	〃	〃	〃	T2 (FM 2ème IFT)	Régler pour une amplitude maximum (Voir fig. 14.)
	ALIGNEMENT HF sur FM						
(3)	FM	Brancher au point ▼1 via une antenne fictive FM. Côté négatif au point ▼2.	90MHz	90MHz [11,03mm ($^7/_{16}$")]	Voltmètre branché à la bobine oscillatrice.	L3 (bobine d'oscillateur FM) L2 (bobine d'antenne FM)	Régler pour une sortie maximum.
(4)	FM		106MHz	106MHz [75,81mm ($2^{31}/_{32}$")]	〃	CT2 trimmer d'oscillateur FM) CT1 (trimmer d'antenne FM)	(*3) Régler pour une sortie maximum. Refaire les étapes (3) et (4).
	(*3) Il y aura trois réponses de sortie; la syntonisation adéquate est la fréquence du milieu.						

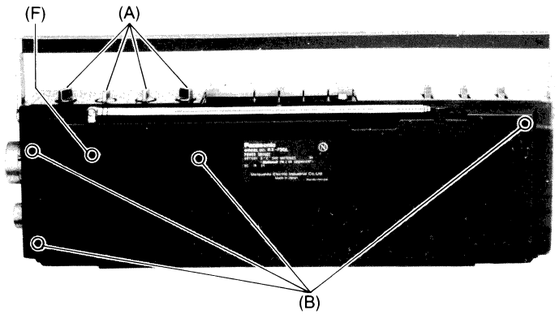
■ ALIGNEMENT DE LA SEPARATION

ELEMENT	GENERATEUR DE SIGNAUX FM BRANCHEMENT SUR LA SOURCE	BRANCHEMENT A L'EQUIPMENT (COMPTEUR ELECTRONIQUE)	REGLAGE	SPECIFICATION	REMARQUES
Réglage du signal pilote.	98MHz, 60dB	▼6 ...(+) ▼7 ...(−)	VR1	19kHz	Régler VR1 pour 19kHz (±0,1Hz) en effectuant la lecture sur le compteur électronique.

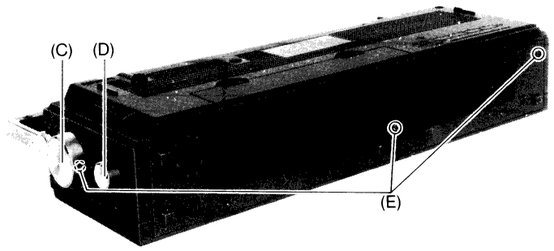
■ ALIGNEMENTS AUDIO

ELEMENT	ENTREE	POINT DE MESURE	SPECIFICATION	POINT DE REGLAGE	OBSERVATIONS
Azimuth	QZZCFM (8kHz, −20dB)	EXT SP	Régler pour une sortie maximum.	Vis d'azimut	Mode de lecture
Fréquence d'oscillation de polarisation	——	▼10 ...(+) ▼11 ...(−)	70±0,5kHz	L301	Mode d'enregistrement Interrupteur anti-battement → I Sélecteur de bande...Metal
Courant de polarisation	Utiliser une bande METAL.	▼101 ... + (canal gauche) ▼102 ... − (canal gauche) ▼201 ... + (canal droit) ▼202 ... − (canal droit)	Métal 950±100μA CrO_2 650±100μA Normal 470±100μA	VR105	Mode d'enregistrement Interrupteur anti-battement → I Sélecteur de bande... METAL

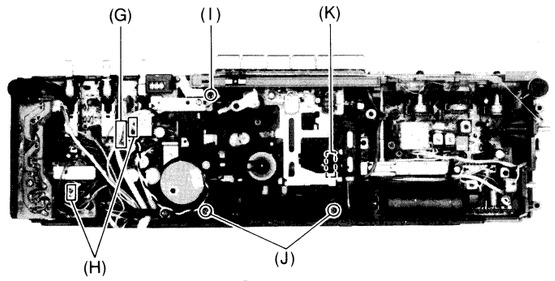
DISASSEMBLY INSTRUCTIONS



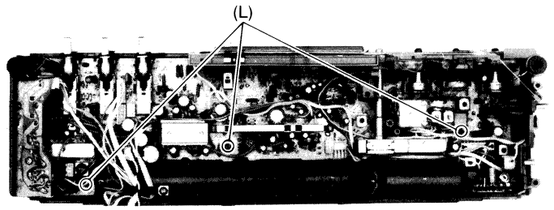
[Fig. 2]



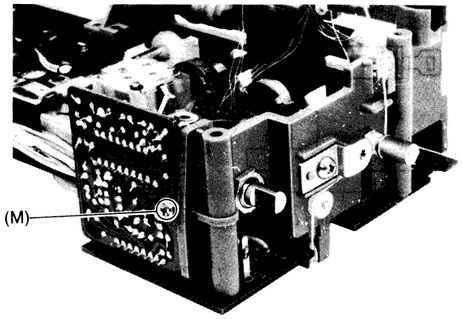
[Fig. 3]



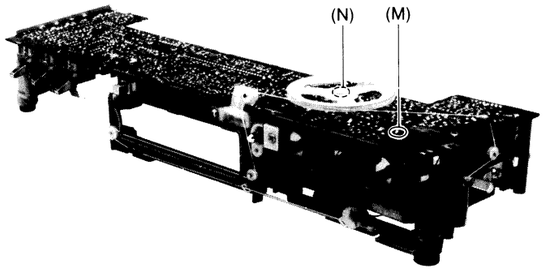
[Fig. 4]



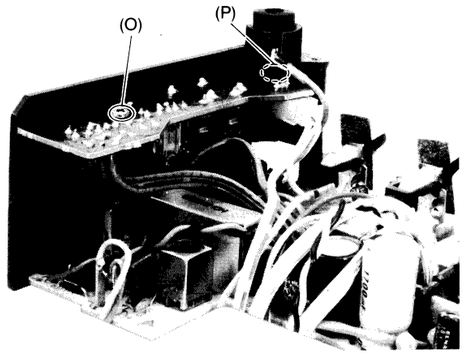
[Fig. 5]



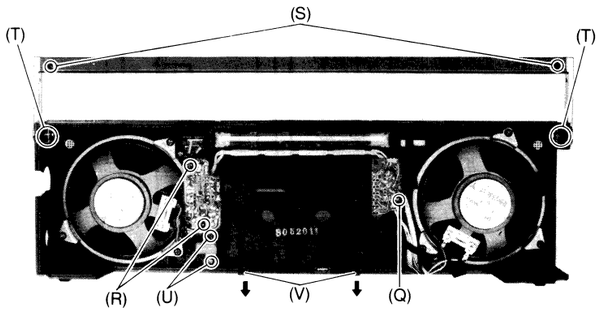
[Fig. 6]



[Fig. 7]



[Fig. 8]

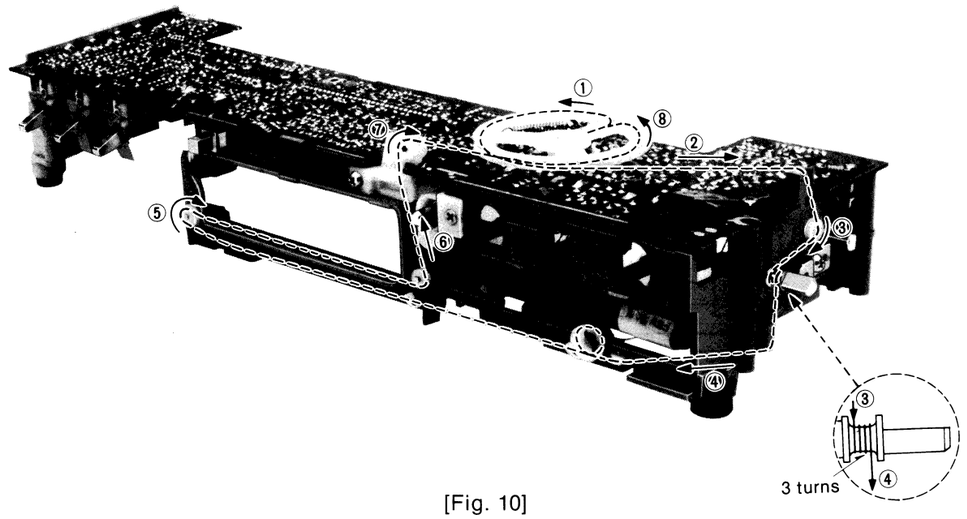


[Fig. 9]

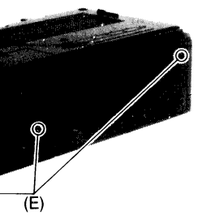
Procedure	To remove —.	Remove —.	Shown in Fig. —.
1	Front Cabinet	Knob .....(A)×4 Screw (3×60) .....(B)×4	2
		Tuning Knob .....(C)×1 Fine Tuning Knob .....(D)×1 Screw (3×8) .....(E)×3	3
	Telescopic Antenna	Screw (3×10) .....(F)×1	2
2	Mechanism	Connector (5 pin) .....(G)×1 Connector (3 pin) .....(H)×2 Screw (3×50) .....(I)×1 Screw (3×14) .....(J)×2 Connector (4 pin) .....(K)×1	4
3	Main Circuit Board	Screw (3×12) .....(L)×3	5
4	Dial Chassis	Screw (3×8) .....(M)×2	6, 7
5	Dial Drum	Screw (2.6×8) .....(N)×1	7
6	Jack Circuit Board	Screw (3×8) .....(O)×1 Screw (3×6) .....(P)×1	8
7	LED Circuit Board	Screw (3×8) .....(Q)×1	9
8	TPS Circuit Board	Screw (3×8) .....(R)×2	
9	Handle	Screw (3×8) .....(S)×2 Handle Holding Spring .....(T)×2	
10	Cassette Compartment	Screw (3×8) .....(U)×2 Cassette Retainer .....(V)×2	

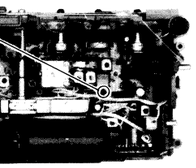
DIAL THREADING

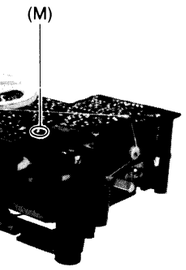
■ **DIAL CORD LENGTH: 95cm ($42^{2}/_{9}$)**

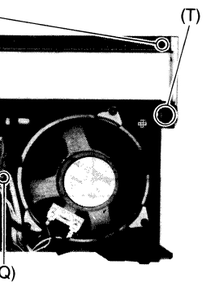


[Fig. 10]





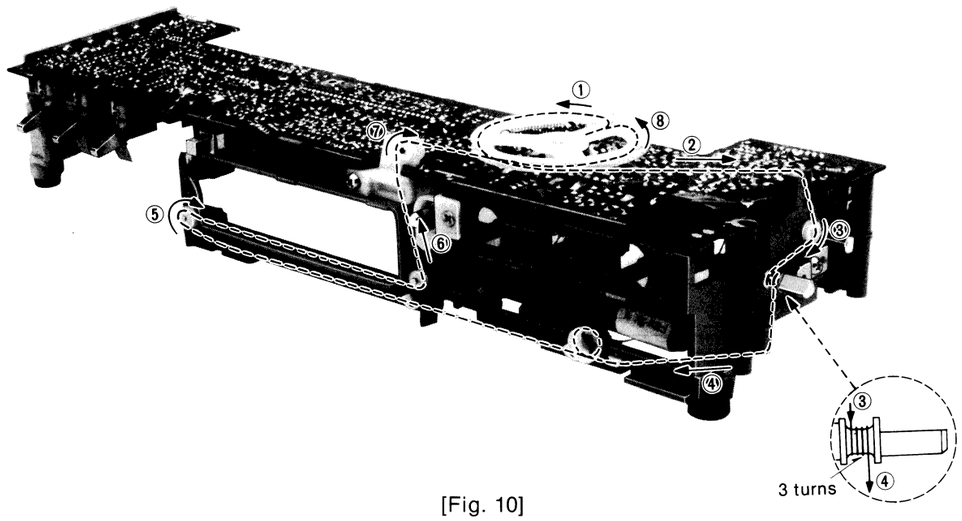




Procedure	To remove —.	Remove —.	Shown in Fig. —.
1	Front Cabinet	Knob .....(A)×4 Screw (3×60) .....(B)×4	2
		Tuning Knob .....(C)×1 Fine Tuning Knob .....(D)×1 Screw (3×8) .....(E)×3	3
	Telescopic Antenna	Screw (3×10) .....(F)×1	2
2	Mechanism	Connector (5 pin) .....(G)×1 Connector (3 pin) .....(H)×2 Screw (3×50) .....(I)×1 Screw (3×14) .....(J)×2 Connector (4 pin) .....(K)×1	4
3	Main Circuit Board	Screw (3×12) .....(L)×3	5
4	Dial Chassis	Screw (3×8) .....(M)×2	6, 7
5	Dial Drum	Screw (2.6×8) .....(N)×1	7
6	Jack Circuit Board	Screw (3×8) .....(O)×1 Screw (3×6) .....(P)×1	8
7	LED Circuit Board	Screw (3×8) .....(Q)×1	9
8	TPS Circuit Board	Screw (3×8) .....(R)×2	
9	Handle	Screw (3×8) .....(S)×2 Handle Holding Spring .....(T)×2	
10	Cassette Compartment	Screw (3×8) .....(U)×2 Cassette Retainer .....(V)×2	

DIAL THREADING

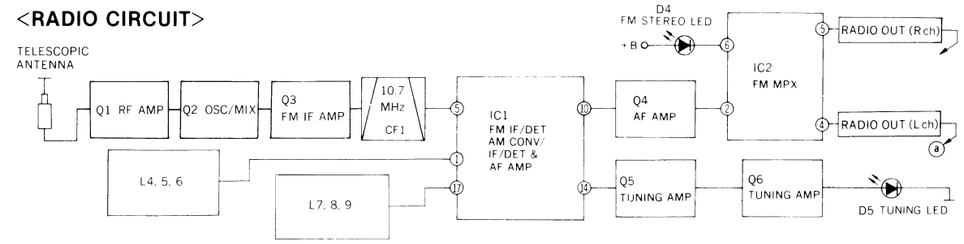
■ **DIAL CORD LENGTH: 95cm (42²/₉)**



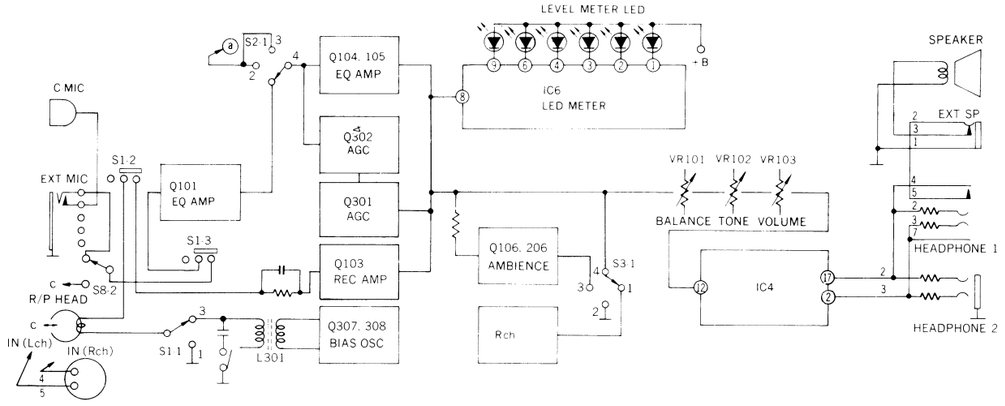
[Fig. 10]

BLOCK DIAGRAM

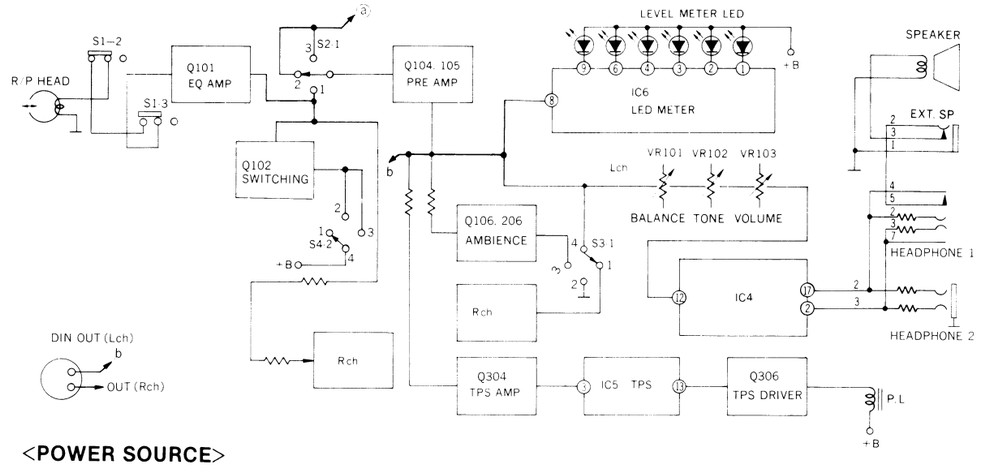
<RADIO CIRCUIT>



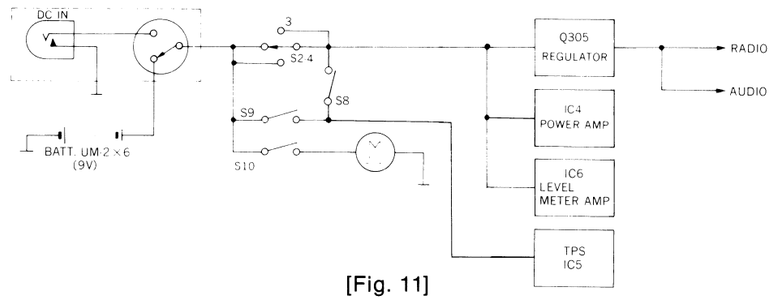
<RECORDING CIRCUIT> (L-ch)



<PLAYBACK CIRCUIT> (L-ch)



<POWER SOURCE>



[Fig. 11]

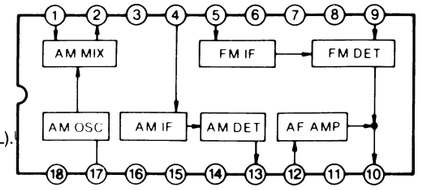
RX-F20L RX-F20L

SCHEMATIC DIAGRAM MODEL RX

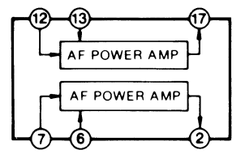
Notes:

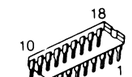
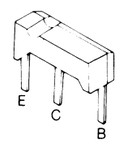
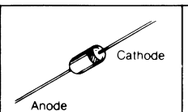
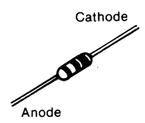
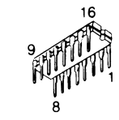
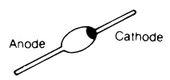
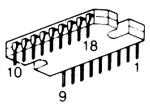
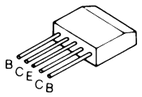
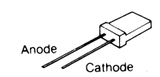
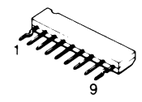
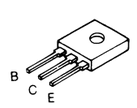
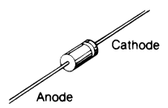
1. S1-1∼S1-10 ...Record/playback switch in "playback" position. (1...Playback, 3...Record).
2. S2-1∼S2-4 ...Function switch in "TAPE" position. (1...TAPE, 2...RADIO, 3...SLEEP).
3. S3-1∼S3-4 ...Mode/beat proof switch in "AMBIENCE/III" position. (1...MONO/1, 2...STEREO/II; 3...AMBIENCE/III).
4. S4-1∼S4-4 ...Tape selector switch in "NORMAL" position. (1...NORMAL, 2...CrO_2, 3...METAL).
5. S5-1∼S5-8 ...Band switch in "FM" position. (1...FM, 2...LW, 3...MW, 4...SW).
6. S6-1, S6-2 ...Rec mute ON/OFF switch in "OFF" position.
7. S7 .....TPS switch.
8. S8-1∼S8-4 ...DIN "ON/OFF" switch in "OFF" position. (1...ON, 3...OFF).
9. S9 .....Play ON/OFF switch in "OFF" position.
10. S10 .....Motor ON/OFF switch in "OFF" position.
11. S11 .....FF, Rewind ON/OFF switch in "OFF" position.
12. VR1 .....VCO oscillator frequency adjustment VR.
13. VR101 .....Balance control VR.
14. VR102 .....Tone control VR.
15. VR103 .....Volume control VR.
16. VR105 .....Bias current adjustment VR.
17. The mark (▼) shows test point e.g. ▼= test point 1.
18. DC voltage measurement are taken with electronics voltmeter from negative terminal of battery.
    < >...FM position, ( )...AM position,
    ≪ ≫...TPS, position, [ ]...Record position.
19. Battery current: No signal 96mA
    Maximum output (radio) 700mA
    Maximum output (tape) 840mA

IC1 AN7220B

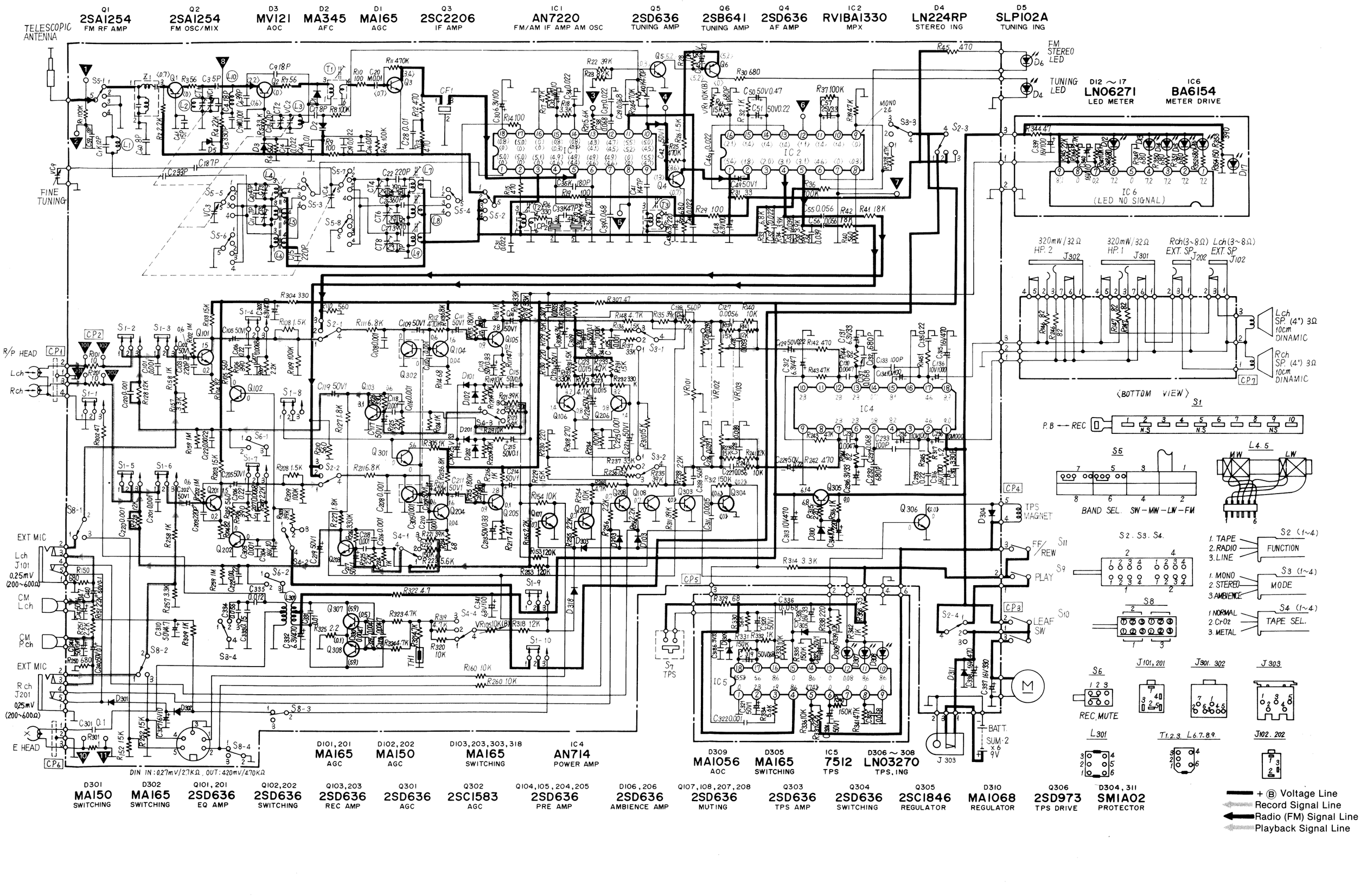


IC4 AN7146M

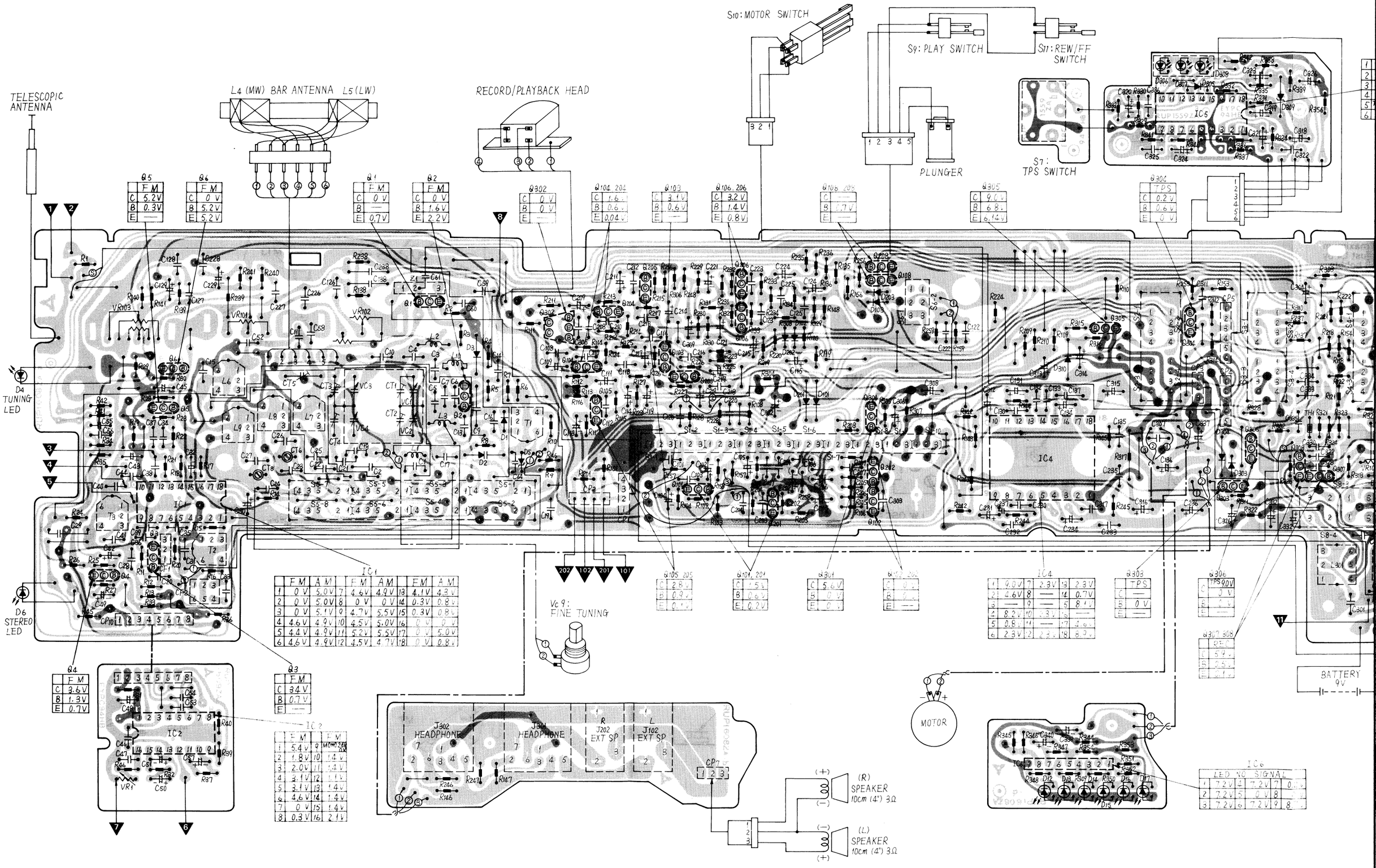


 IC1, 5	 Q1∼6, 101∼108, 201∼208, 301, 303, 304, 306∼308	 D1, 2, 101∼103, 201∼203, 301∼303, 305, 309, 318	 D310
 IC2		 D3	
 IC4	 Q302	 D4	
 IC6	 Q305	 D304, 311	

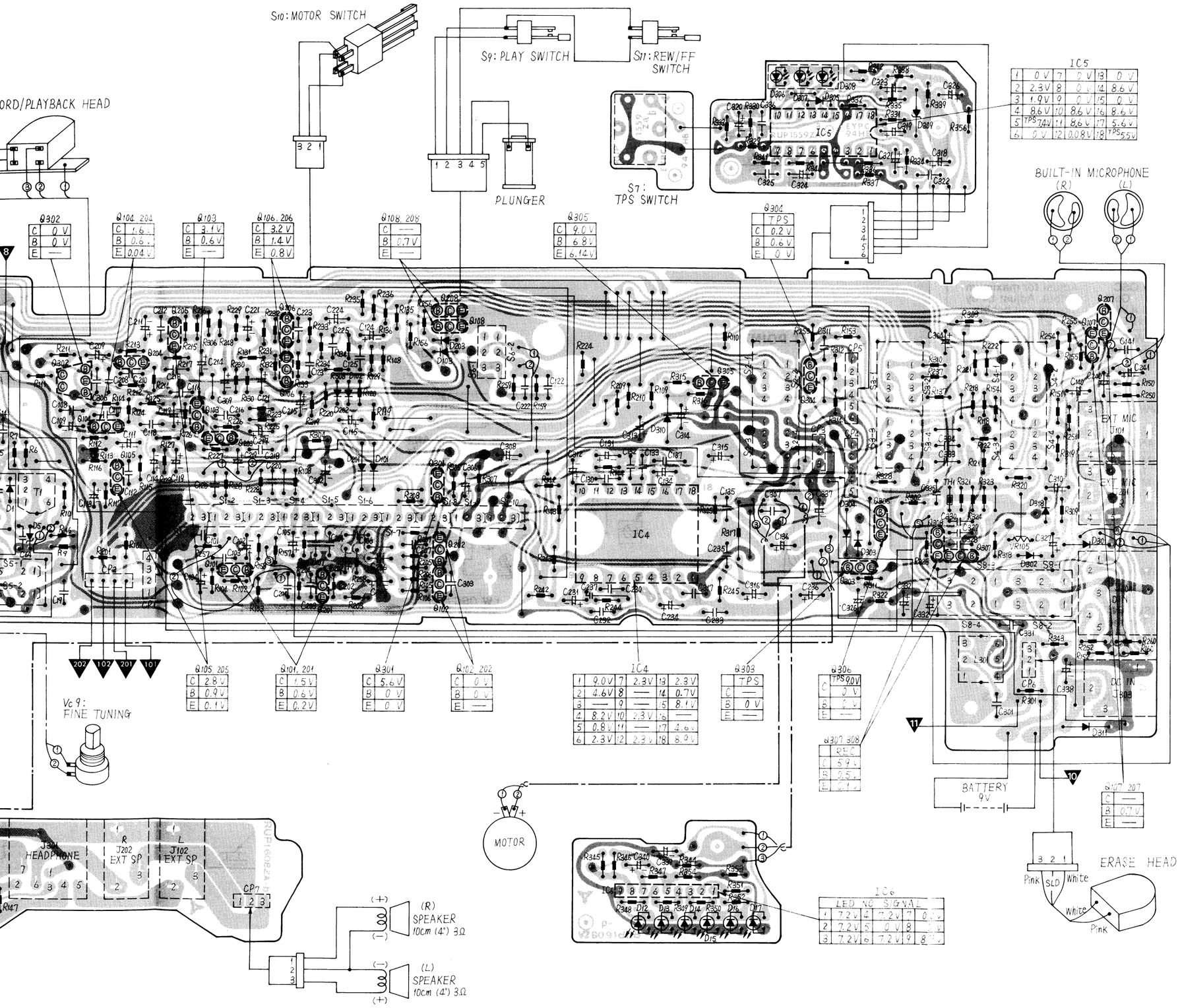
SCHEMATIC DIAGRAM MODEL RX-F20L



CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM MODEL RX-F20L



BOARD AND WIRING CONNECTION DIAGRAM MODEL RX-F20L



IC5

1	0 V	7	0 V	13	0 V
2	2.3V	8	0 V	14	8.6 V
3	1.9V	9	0 V	15	0 V
4	8.6 V	10	8.6 V	16	8.6 V
5	TPS 7.4V	11	8.6 V	17	5.6 V
6	0 V	12	0.08V	18	TPS 5.5V

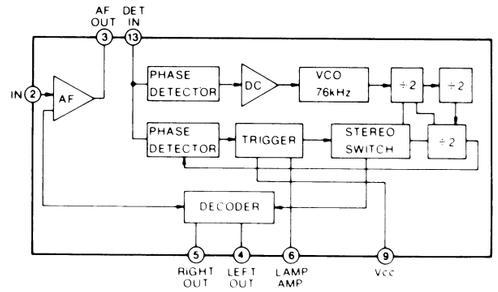
IC4

1	9.0V	7	2.3V	13	2.3V
2	4.6V	8	—	14	0.7V
3	—	9	—	15	8.1V
4	8.2V	10	2.3V	16	—
5	0.8V	11	—	17	4.6V
6	2.3V	12	2.3V	18	8.9V

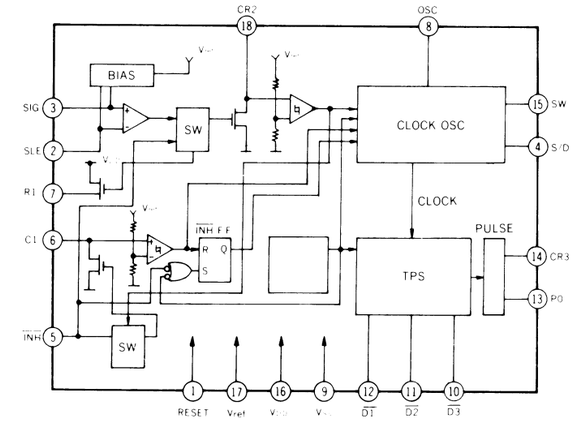
IC6

	LED	NC	SIGNAL		
1	7.2V	4	7.2V	7	0 V
2	7.2V	5	0 V	8	0 V
3	7.2V	6	7.2V	9	8 V

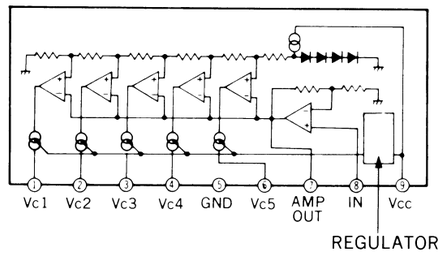
IC2 RVIBA1330



IC5 RVILC7512



IC6 RVIBA6154



MEASUREMENTS AND ADJUSTMENTS

■ ALIGNMENT INSTRUCTION

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

1. Set volume control to maximum.
2. Set tone control to treble.
3. Set band switch to LW, MW, SW or FM.
4. Set balance control to center.
5. Set function selector to radio.
6. Set fine tuning to center.
7. Set power source voltage to 9V DC.
8. Output of signal generator should be no higher than necessary to obtain an output reading.

■ LW, MW, and SW ALIGNMENT

	BAND	SIGNAL GENERATOR or SWEEP GENERATOR CONNECTIONS	SIGNAL GENERATOR or SWEEP GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS
				AM-IF ALIGNMENT			
(1)	AM	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455kHz 30% Mod. at 400Hz.	Point of non-interference. (on/ about 600kHz).	Output meter across voice coil.	T2 (AM IFT)	Adjust for maximum output.
				LW-RF ALIGNMENT			
(2)	LW	〃	145kHz	145kHz [9.5mm(3/8")]	Output meter across voice coil.	L7 (LW OSC Coil) (*1) L4 (LW ANT Coil)	Adjust for maximum output. Adjust L4 by moving coil bobbin along ferrite core.
(3)	LW	〃	285kHz	285kHz [80.69mm(3 3/16")]	〃	CT5 (LW OSC Trimmer) CT3 (LW ANT Trimmer)	Adjust for maximum output. Repeat steps (2) and (3).
				MW-RF-ALIGNMENT			
(4)	MW	〃	550kHz	550kHz [9.5mm(3/8")]	Output meter across voice coil.	L8 (MW OSC Coil) (*1) L5 (MW ANT Coil)	Adjust for maximum output. Adjust L5 by moving coil bobbin along ferrite core.
(5)	MW	〃	1,500kHz	1,500kHz [80.69mm(3 3/16")]	〃	CT6 (MW OSC Trimmer) CT4 (MW ANT Trimmer)	Adjust for maximum output. Repeat steps (4) and (5).
	(*1) Cement antenna bobbin with wax after completing alignment.						
				SW-RF ALIGNMENT			
(6)	SW	Connect to test point ▼1 through ceramic capacitor (10pF). Negative side to test point ▼2.	5.9MHz	5.9MHz [3.36mm(1/8")]	Output meter across voice coil.	L9 (SW OSC Coil) L6 (SW ANT Coil)	Adjust for maximum output.
(7)	SW		18MHz	18MHz [85.34mm(3 11/32")]	〃	CT8 (SW ANT Trimmer)	Adjust for maximum output. Repeat steps (6) and (7).

■ FM ALIGNMENT

	BAND	SIGNAL GENERATOR or SWEEP GENERATOR CONNECTIONS	SIGNAL GENERATOR or SWEEP GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS
				FM-IF ALIGNMENT			
(1)	FM	Connect to test point ▼5 through 0.001μF. Negative side to test point ▼2.	10.7MHz (SWP.)	Point of non-interference. (on/ about 90MHz).	Connect vert. amp. of scope to test point ▼4. Negative side to test point ▼5.	T1 (FM 1st IFT)	Adjust for maximum amplitude. (Refer to fig. 13.)
(2)	FM	〃	〃	〃	〃	T3 (FM 2nd IFT)	Adjust for maximum amplitude. (Refer to fig. 14.)
				FM-RF ALIGNMENT			
(3)	FM	Connect to test point ▼1 through FM dummy antenna. Negative side to test point ▼2.	90MHz	90MHz [11.03mm(7/16")]	Output meter across voice coil.	L3 (FM OSC Coil) L2 (FM ANT Coil)	Adjust for maximum output.
(4)	FM		106MHz	106MHz [75.81mm(2 31/32")]	〃	CT2 (FM OSC Trimmer) CT1 (FM ANT Trimmer)	(*2) Adjust for maximum output. Repeat steps (3) and (4)
	(*2) Three output responses will be present; proper tuning is the center frequency.						

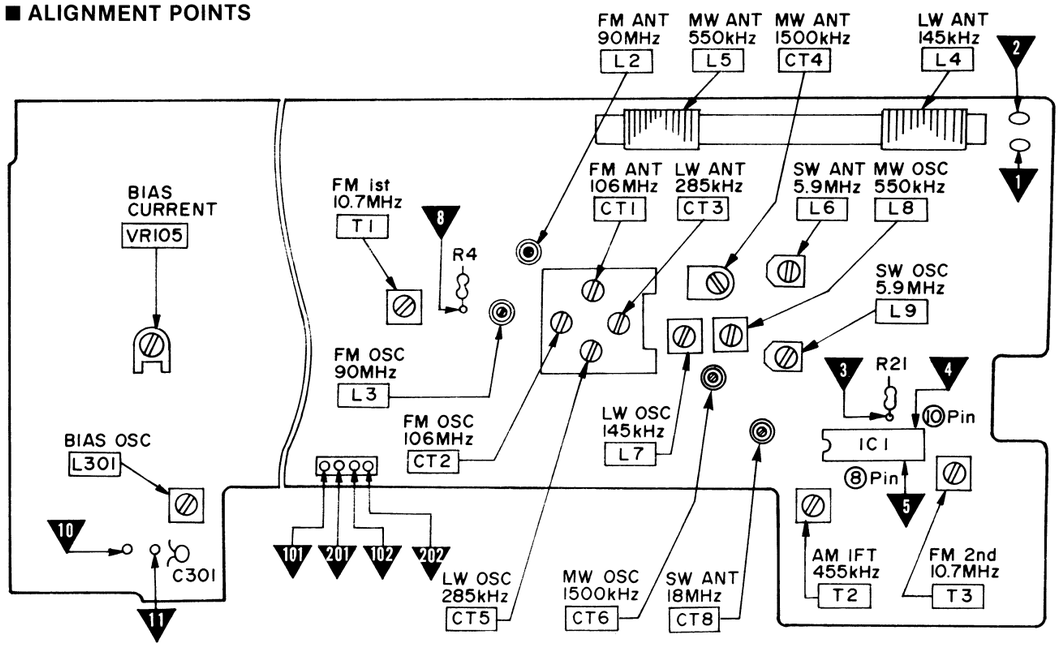
■ SEPARATION ALIGNMENT

ITEM	FM SIGNAL GENERATOR SOURCE CONNECTION	EQUIPMENT CONNECTION ELECTRONIC COUNTER	ADJUSTMENT	SPECIFICATION	REMARKS
Adjustment of pilot signal.	98MHz, 60dB (Mod CW)	▼6...(+) ▼7...(−)	VR1	19kHz	Adjust VR1, for 19kHz (±0.1kHz) reading on electronics counter.

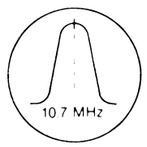
■ AUDIO ADJUSTMENT

ITEM	INPUT	MEASUREMENT POINT	SPECIFICATION	ADJUSTMENT POINT	REMARKS
Azimuth	QZZCFM (8kHz, −20dB)	EXT SP	Maximum output.	Azimuth screw.	Playback mode.
Bias oscillation Frequency.	———	▼10...(+) ▼11...(−)	70±0.5kHz	L301	Record mode Beat proof switch → I Tape selector → Metal
Bias current	Use metal tape	▼101 Lch (+) ▼102 Lch (−) ▼201 Rch (+) ▼202 Rch (−)	Metal...950±100μA CrO_2...650±100μA NORMAL... 470±100μA	VR105	Record mode Beat proof switch → I Tape selector → Metal

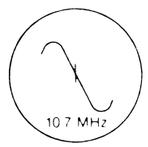
■ ALIGNMENT POINTS



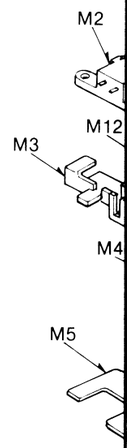
[Fig. 12]



[Fig. 13]



[Fig. 14]



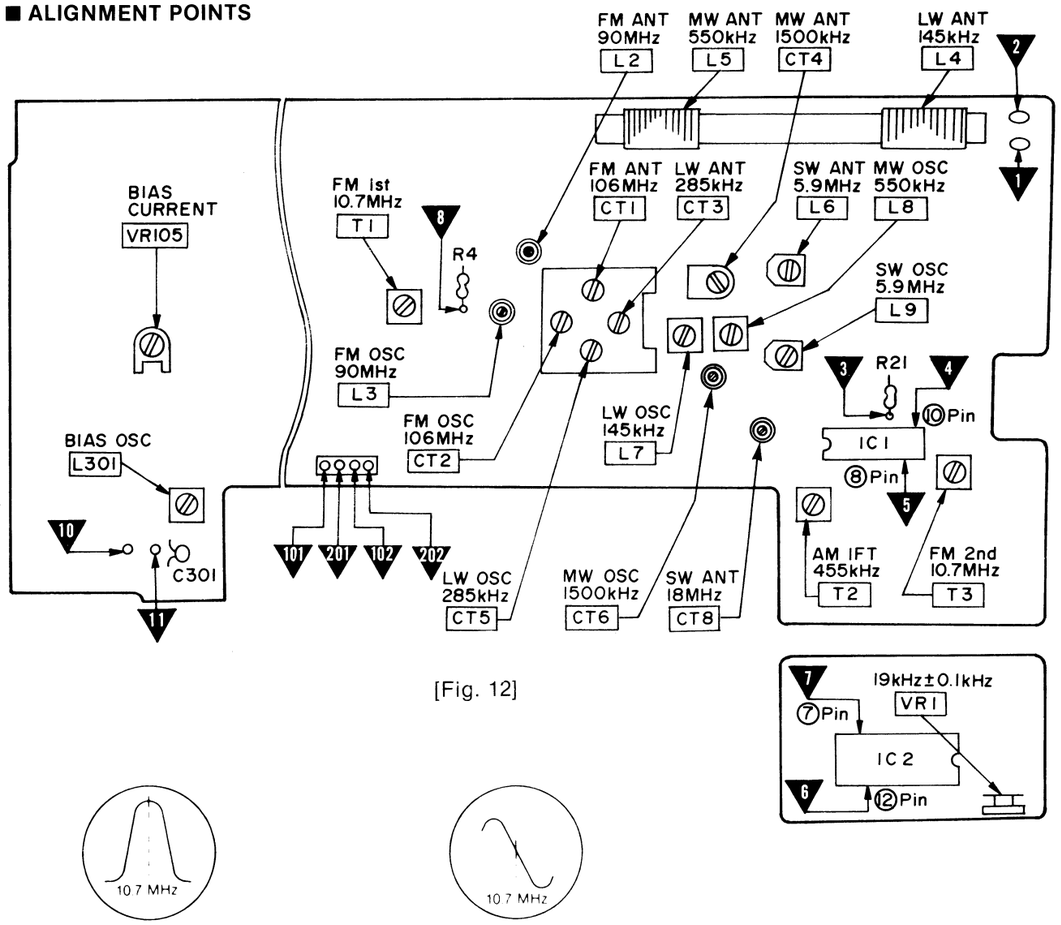
■ SEPARATION ALIGNMENT

ITEM	FM SIGNAL GENERATOR SOURCE CONNECTION	EQUIPMENT CONNECTION ELECTRONIC COUNTER	ADJUSTMENT	SPECIFICATION	REMARKS
Adjustment of pilot signal.	98MHz, 60dB (Mod CW)	⑥...(+) ⑦...(−)	VR1	19kHz	Adjust VR1, for 19kHz (±0.1kHz) reading on electronics counter.

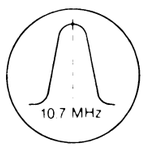
■ AUDIO ADJUSTMENT

ITEM	INPUT	MEASUREMENT POINT	SPECIFICATION	ADJUSTMENT POINT	REMARKS
Azimuth	QZZCFM (8kHz, −20dB)	EXT SP	Maximum output.	Azimuth screw.	Playback mode.
Bias oscillation Frequency.	——	⑩...(+) ⑪...(−)	70±0.5kHz	L301	Record mode Beat proof switch → I Tape selector → Metal
Bias current	Use metal tape	⑩ Lch (+) ⑩ Lch (−) ⑳ Rch (+) ⑳ Rch (−)	Metal...950±100μA CrO_2...650±100μA NORMAL... 470±100μA	VR105	Record mode Beat proof switch → I Tape selector → Metal

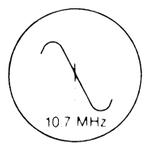
■ ALIGNMENT POINTS



[Fig. 12]

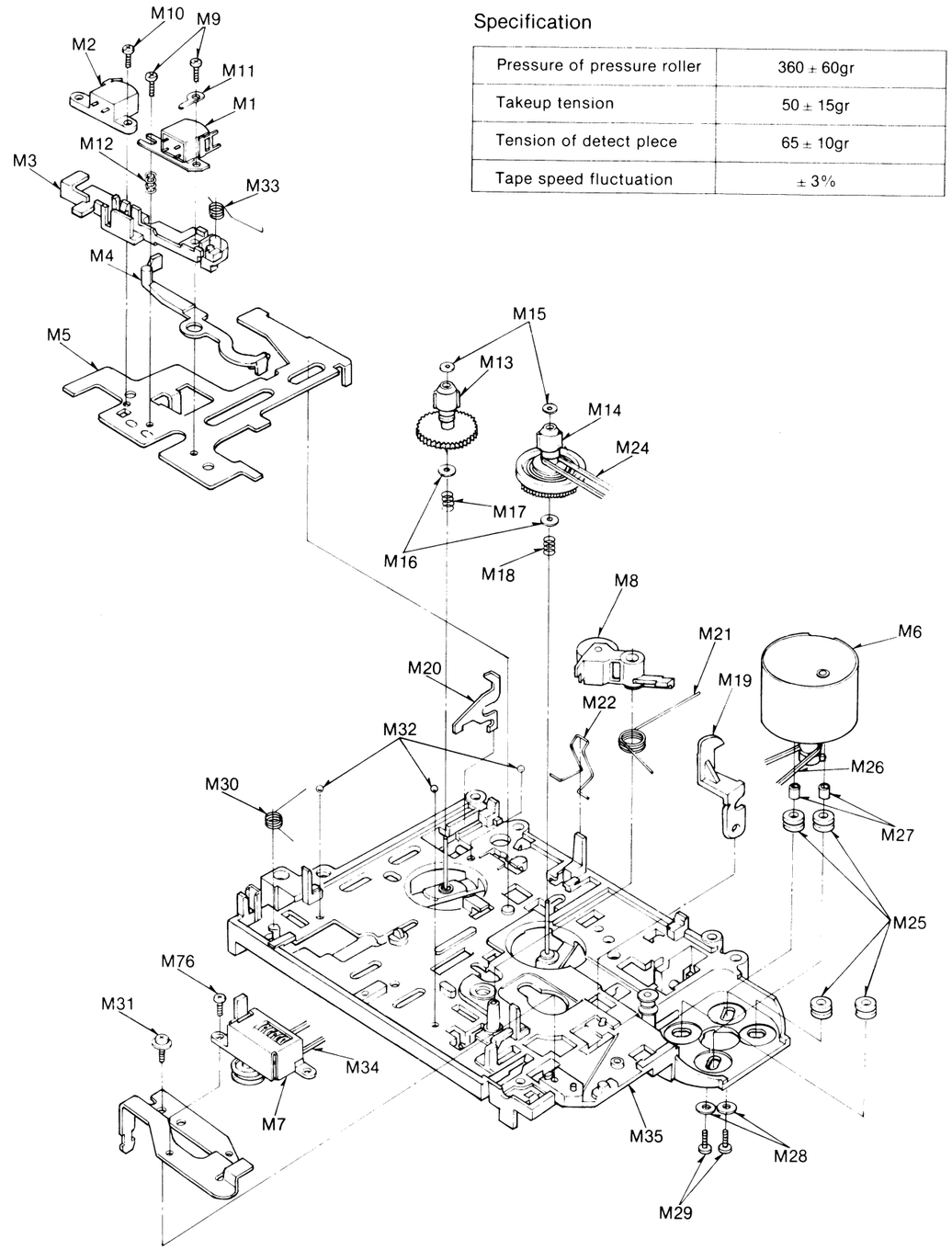


[Fig. 13]



[Fig. 14]

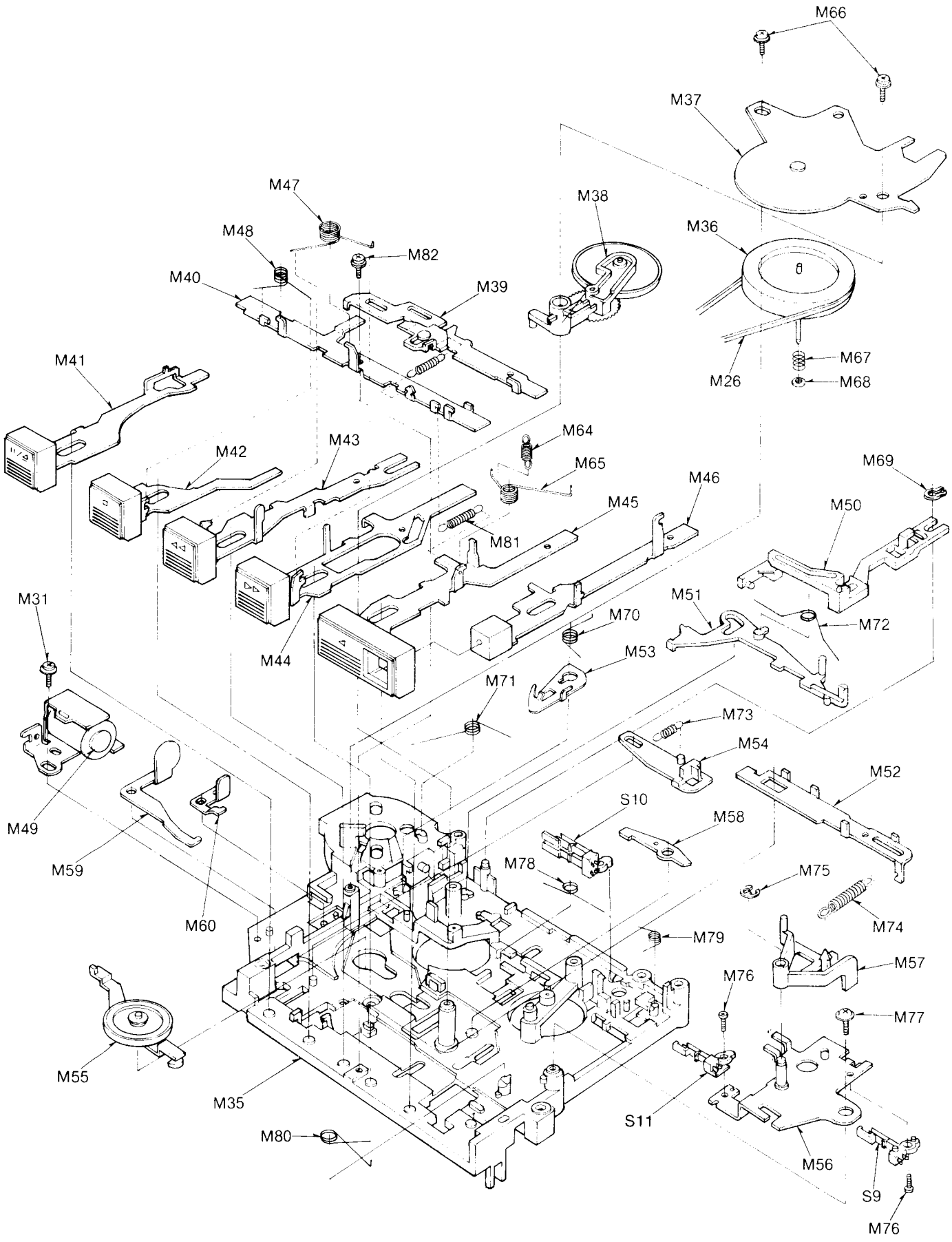
MECHANISM PARTS LOCATION



Specification

Pressure of pressure roller	360 ± 60gr
Takeup tension	50 ± 15gr
Tension of detect piece	65 ± 10gr
Tape speed fluctuation	± 3%

[Fig. 15]


M66
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M47
M38
M48
M36
M82
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M41
M67
M26
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M64
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M65
M69
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M45
M50
M81
M31
M51
M70
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M54
M52
M49
S10
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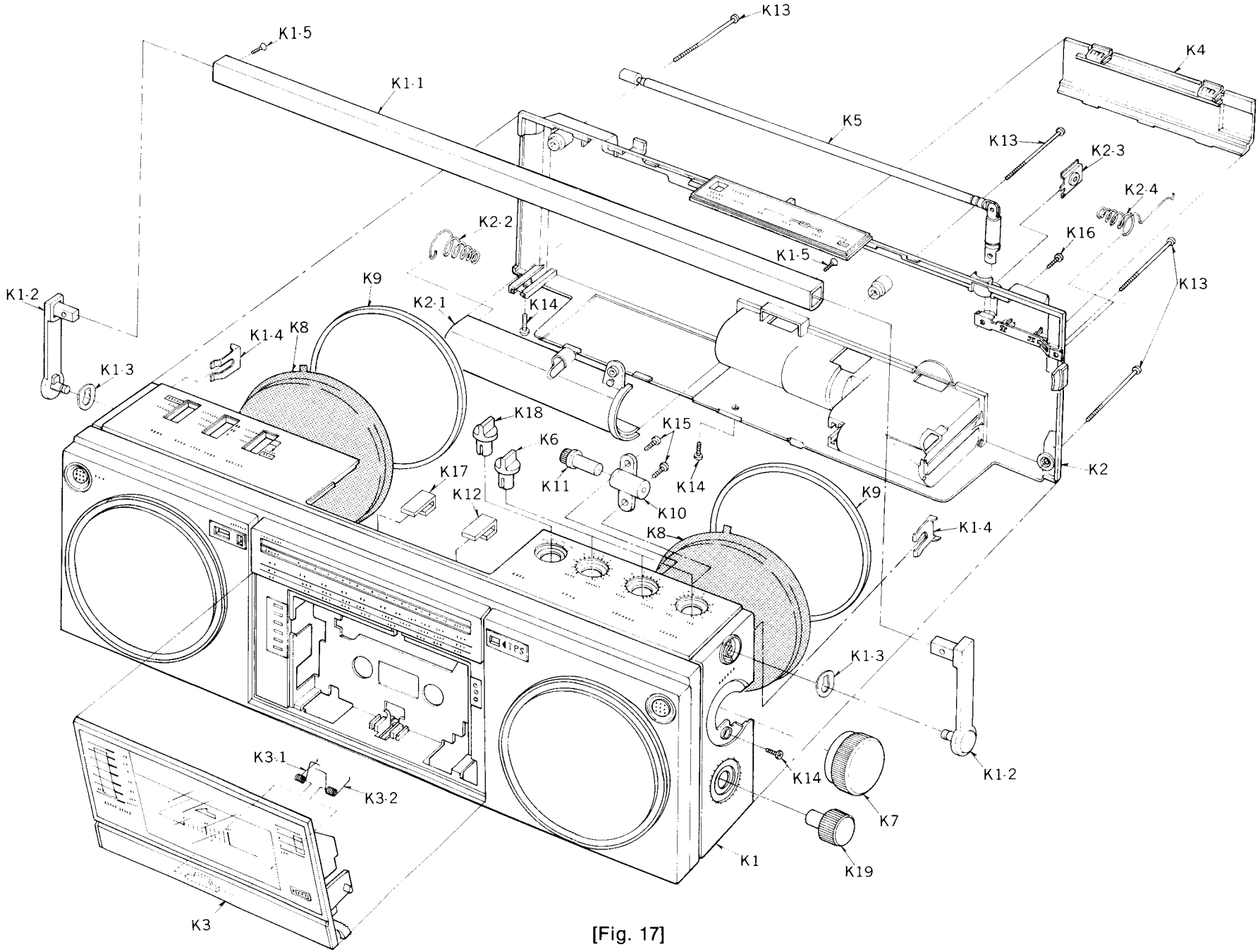
M78
M75
M60
M74
M79
M57
M76
M77
M55
M35
S11
M80
M56
S9
M76

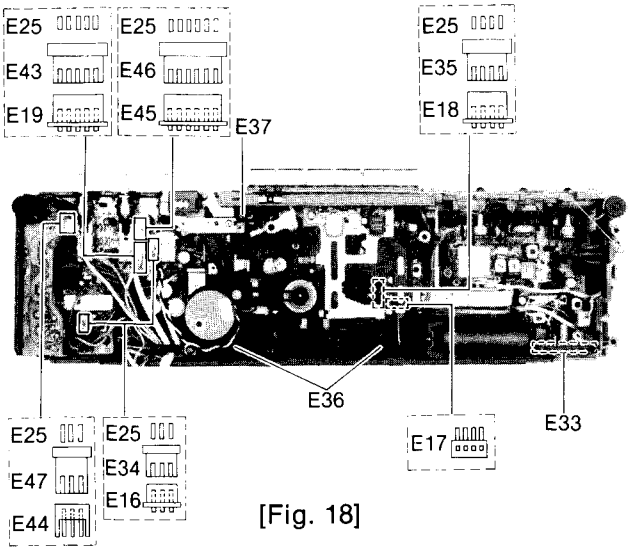
[Fig. 16]

CABINET PARTS LOCATION

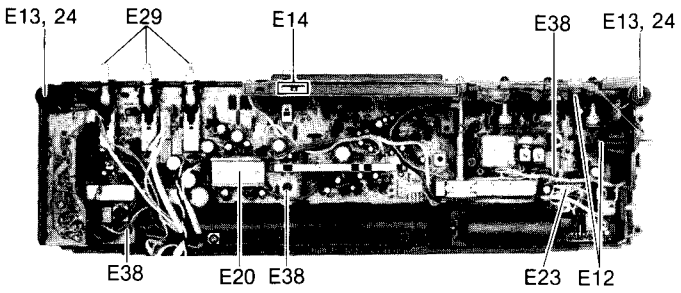


[Fig. 17]

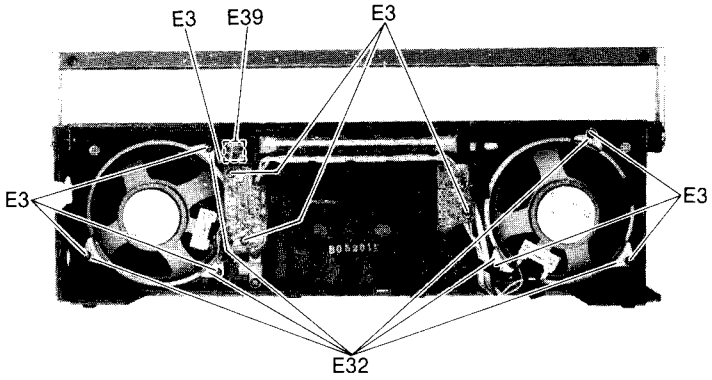
ELECTRICAL PARTS LOCATION



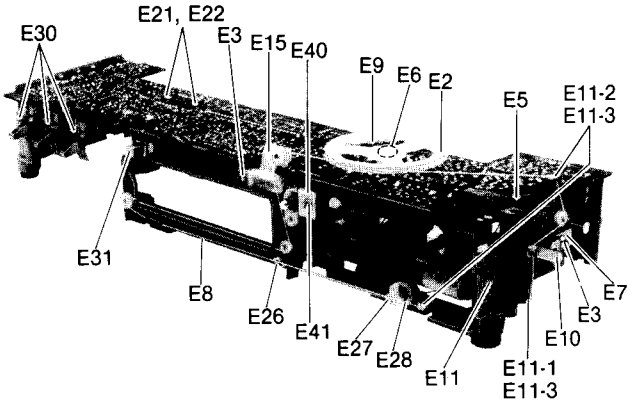
[Fig. 18]



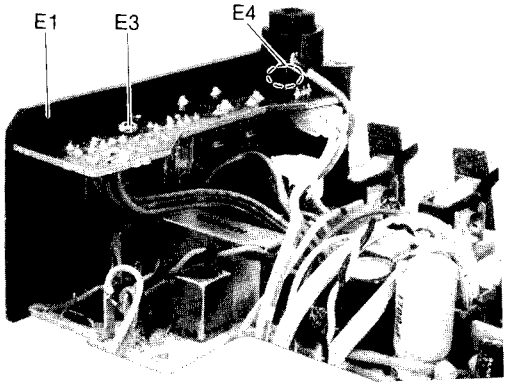
[Fig. 19]



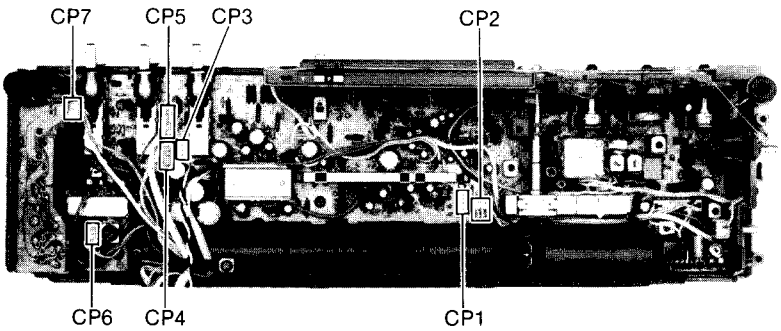
[Fig. 20]



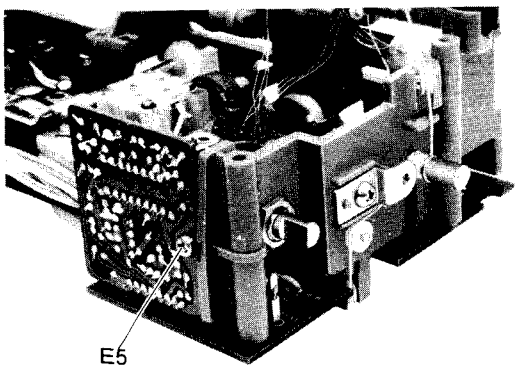
[Fig. 21]



[Fig. 22]



[Fig. 24]



[Fig. 23]

CP1: R/P Head connector
CP2: Bias check pin
CP3: MOTOR Switch connector
CP4: PLUNGER/REW/FF connector
CP5: TPS Board connector
CP6: Earth head connector
CP7: Speaker connector

■ REPLACEMENT PARTS LIST .....Model RX-F20L

(RD82065279C2)

NOTES: 1. Important safety notice.
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.
2. The S mark indicates service standard parts and may differ from production parts.

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
		MECHANICAL PARTS		
M1	QWY4133ZK	Head, Record/Playback	1	
M2	QWY2151Z	Head, Erase	1	
M3	QMZ1286	Table, Head	1	
M4	QML3534	Lever, Auto Stop Detector	1	
M5	QMK1965	Plate, Head Base	1	
M6	QXU0287	Motor Ass'y	1	
M7	QDC0104	Counter	1	
M8	QXL1325	Pressure Roller Ass'y	2	
M9	XSB2D6FX	Screw, 2x6	1	
M10	XSB2D7FX	Screw, 2x7	1	
M11	QJT0039	Terminal, Earth	1	
M12	QBC1322	Spring, Head Adjusting	1	
M13	QDR1141	Supply Reel Table	1	
M14	QXD0113	Take Up Reel Table Ass'y	1	
M15	QBW2008	Washer	2	
M16	QBJ3224	Washer	2	
M17	QBC1272	Spring, Back Tension	1	
M18	QBC1272	Spring, Back Tension	1	
M19	QML3873	Lever, Cassette Lock	1	
M20	QML3527	Lever, Erase Safety	1	
M21	QBN1702	Spring, Pinch Roller	1	
M22	QBN1711	Spring, Cassette Retainer	1	
M24	QDB0319	Belt, Counter (1)	1	
M25	QBG1420	Cushion, Motor	4	
M26	QDB0318	Belt, Flywheel	1	
M27	QMC0108	Pipe, Motor	2	
M28	XWG2X7.5B	Washer, 2x7.5	2	
M29	XSB2D7FX	Screw, 2x7	1	
M30	QBN1881	Spring, TPS Lock Rod	1	
M31	XTW26+6S	Screw, 2.6x6	1	
M32	QDK1012	Ball, Steel	3	
M33	QBN1703	Spring, Pressure Roller	1	
M34	QDB0317	Belt, Counter (2)	1	
M35	QMK2599	Base Plate Ass'y	1	
M36	QXF0193	Flywheel Ass'y	1	
M37	QXH0397	Flywheel Holding Plate Ass'y	1	
M38	QXL1534	Fast Forward Frame Ass'y	1	
M39	QXR0820	Lock Rod Ass'y	1	
M40	QMF2237	Plate, Rod Holding	1	
M41	QXR0818	Eject/Pause Rod Ass'y	1	
M42	QXR0817	Stop Rod Ass'y	1	
M43	QXR0816	Fast Forward Rod Ass'y	1	
M44	QXR0815	Rewind Rod Ass'y	1	
M45	QXR0814	Playback Rod Ass'y	1	
M46	QXR0813	Record Rod Ass'y	1	
M47	QBN1777	Spring, Fast Forward Rod	1	
M48	QBN1709	Spring, Stop Rod	1	
M49	QME0162	Plunger	1	
M50	QML3871	Lock Plate Operation Lever	1	
M51	QML3869	Lever, Change	1	
M52	QMR1993	TPS Lock Rod	1	
M53	QML3528	Lever, Pause Lock	1	
M54	QXR0819	Rod, Auto-Stop Detection	1	
M55	QXL1324	Idler, Lever Ass'y	1	
M56	QXH0398	Holding Plate, Rec/Play Switch Operation	1	
M57	QML3870	Lever, Rec/Play Switch	1	
M58	QMR1999	Lever, Cue	1	
M59	QML3866	Lever, TPS Operation	1	
M60	QMF2239	Lever, Cassette-Up	1	
M64	QBT1957	Spring, Head Base Plate	1	
M65	QBN1776	Spring, Play Back Rod	1	
M66	XTW26+10SFX	Screw, 2.6x10	2	
M67	QBC1302	Spring, Flywheel	1	
M68	QBJ3098	Washer	1	
M69	XUBQ3V	Circlip	1	
M70	QBN1705	Spring, Pause Lock Lever	1	
M71	QBN1882	Spring, Eject Operation Lever	1	
M72	QBN1880	Spring, Change Lever	1	
M73	QBT1956	Spring, Auto-Stop Detection	1	
M74	QBT1958	Spring, Rec/Play Switch Lever	1	
M75	XUC3FT	Circlip	1	
M76	XTN2+5F	Screw, 2x5	3	
M77	XTW3+10Q	Screw, 3x10	1	
M78	QBN1891	Spring, Fast Forward	1	
M79	QBN1704	Spring, Erase Safety Lever	1	
M80	QBN1706	Spring, Record Rod	1	
M81	QBT1560	Spring	1	
M82	XTW26+8SFX	Screw, 2.6x8	1	
		INTEGRATED CIRCUITS, TRANSISTORS AND DIODES		
IC1	AN7220B	IC	1	
IC2	RVIBA1330	IC	1	
IC4	AN7146M	IC	1	
IC5	RVILC7512	IC	1	
IC6	RVIBA6154	IC	1	
Q1,2	2SA1254B	Transistor (Ge)	2	
Q3	2SC2206B	Transistor (Si)	1	
Q4,5,102,108,202,208,301,	103,105∿ 203,205∿ 303,304			
	2SD636R	Transistor (Si)	17	
Q302	2SC1583F	Transistor (Si)	1	
Q6	2SB641R	Transistor (Si)	1	
Q101,201	2SD636HS	Transistor (Si)	2	
Q104,204	2SD636HR	Transistor (Si)	2	
Q306	2SD973R	Transistor (Si)	1	
Q307,308	2SD638R	Transistor (Si)	2	
Q305	2SC1846R	Transistor (Si)	1	S
D2	MA345	Diode (Si)	1	
D3	MV121	Diode (Si)	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
D1,102,103,202,203, 302,303,305,318	MA165	Diode (Si)	9	S
D4	LN224RP	LED (FM Stereo)	1	
D5	SLP102A	LED (Tuning)	1	
D6	RVDRD3R3EB1	Zener	1	
D101,201,301	MA161	Diode (Si)	3	S
D304,311	RVDSM1A02	Diode (Si)	2	S
D306∿308	LN03270P	3 LED (TPS)	1	
D309	MA1056	Zener	1	S
D310	RVDRD6R8EB	Zener	1	
D12∿17	LN06271P	6 LED (Level/Power)	6	
		THERMISTOR		
TH1	ERTD2FHL332S	Thermistor	1	
		VARIABLE CAPACITORS		
VC1∿4	RCV4RC2VK	Tuning Capacitor, w/Trimmer Condenser (CT1,2,3,4)	1	
VC9	RCVFT7-15PE	Fine Tuning Capacitor	1	
CT5	RCV1T-8M	Tuning Capacitor		
CT6,8	ECVCTZ3110	Trimmer Condenser	2	
		CERAMIC FILTERS		
CF1	RVF107MFZW	Ceramic Filter, FM (10.7MHz)	1	
CF2	RVFSFZ455B	Ceramic Filter, AM (455KHz)	1	
		COMPONENT COMBINATION		
Z1	RXABPMB3	Component Combination	1	
		SPEAKER		
	EAS10P81GU	Speaker, 10cm (4"), 3Ω	2	
		SWITCHES		
S1	RSH2J02Z	Switch, Record/Playback	1	
S2,3,4	RST3D16Z	Switch, Function, Mode, Tape Selector	3	
S5	RSH4H11Z	Switch, Band	1	
S6	RSH2B09Z	Switch, Rec Mute	1	
S7	RSH1A20Z	Switch, TPS	1	
S8	QSS4210	Switch, DIN	1	
S9	QSB0273	Switch, Play	1	
S10	QSB0277	Switch, Motor	1	
S11	QSB0253	Switch, FF/Rew	1	
		JACKS		
J101,201	RJJ1D2Z	Jack, EXT. MIC	2	
J102,202	QJA0154	Jack, EXT. SP	2	
J301,302	QJA0468	Jack, Headphone	2	
J303	RJJ97Y	Jack, DC IN	1	
J304	QJS1954	Jack, DIN	1	
		COILS AND TRANSFORMERS		
L2	RLD4N5	Antenna Coil, FM	1	
L3	RLO4N20	Oscillator Coil, FM	1	
			1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
L4,5	RLF6W4	Antenna Coil, MW, SW1	1	
L6	RLA3M8	Antenna Coil, SW	1	
L7	RLO1M4	Oscillator Coil, LW	1	
L8	RLO2M4	Oscillator Coil, MW	1	
L9	RLO3M31	Oscillator Coil, SW	1	
L301	RLO9C29	Oscillator Coil, Bias	1	
T1,3	RLI4M101	IFT, FM 1st, 2nd	2	S
T2	RLI2M102	IFT, AM	1	
		VARIABLE RESISTORS		
VR1	EVNJ0AA00B14	Preset, 10kΩ (B)	1	S
VR101	EWHP0AF25G54	Variable Resistor, 50kΩ (G)	1	
VR102	EWCVAAF25A54	Variable Resistor, 50kΩ (A)	1	
VR103	EWCS1AF25A54	Variable Resistor, 50kΩ (A)	1	
VR104	EWHP0AF25A54	Variable Resistor, 50kΩ (A)	1	
VR105	EVNM4AA00B14	Preset, 10kΩ (B)	1	S
		RESISTORS (Value is in OHMS)		
R239	ERD25FJ153	15 k 1/4W Carbon	1	S
R145,245,301	ERD10TJ1R0	1.0 1/8W "	3	S
R325	ERD10TJ3R3	3.3 " "	1	S
R322	ERD10TJ4R7	4.7 " "	1	S
R101,201	ERD10TJ100	10 " "	2	S
R117,217,302,307,344	ERD10TJ470	47 " "	5	S
R3,7	ERD10TJ560	56 " "	2	S
R114,214,329	ERD10TJ680	68 " "	3	S
R104,144,146,147, 204,244,246,247	ERD10TJ820	82 " "	8	S
R9,10,14,19,29,306	ERD10TJ101	100 " "	6	S
R354	ERD10TJ151	150 " "	1	S
R130,230,315,338	ERD10TJ221	220 " "	4	S
R308	ERD10TJ271	270 " "	1	S
R16,304	ERD10TJ331	330 " "	2	S
R106,206,353	ERD10TJ391	390 " "	3	S
R12,13,15, 45,142,242	ERD10TJ471	470 " "	6	S
R6,105,205,110,210	ERD10TJ561	560 " "	5	S
R20,27,30,150, 250,348∿352	ERD10TJ681	680 " "	10	S
R116,124,216, 224,305,309, 316,332,342	ERD10TJ102	1 k " "	9	S
R318	ERD10TJ122	1.2 k " "	1	S
R26,108,131,208,231	ERD10TJ152	1.5 k " "	5	S

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
R127,227	ERD10TJ182	1.8 k 1/8W Carbon	2	S
R2,4,107,151, 155,156,207,251, 255,256,337	ERD10TJ222	2.2 k " "	11	S
R346	ERD10TJ272	2.7 k " "	1	S
R5,18,157,257,314	ERD10TJ332	3.3 k " "	5	S
R34,35	ERD10TJ392	3.9 k " "	2	S
R133,148,233,248, 319,321,323,324	ERD10TJ472	4.7 k " "	8	S
R21,123,223,334	ERD10TJ562	5.6 k " "	4	S
R33,111,113,211,213	ERD10TJ682	6.8 k " "	5	S
R28,119,140,154, 160,219,240,254, 260,320,333, 336,339,347	ERD10TJ103	10 k " "	14	S
R128,141,228,241	ERD10TJ123	12 k " "	4	S
R103,129,136,139, 152,203,229,236, 239,252,310	ERD10TJ153	15 k " "	10	S
R38,42	ERD10TJ183	18 k " "	2	S
R125,138,225,238,345	ERD10TJ223	22 k " "	5	S
R118,137,218,237	ERD10TJ333	33 k " "	4	S
R22,121,135,221, 235,303,311	ERD10TJ393	39 k " "	7	S
R17,143,243,341	ERD10TJ473	47 k " "	4	S
R23	ERD10TJ823	82 k " "	1	S
R1,8,36,46,109, 134,209,234	ERD10TJ104	100 k " "	8	S
R153,253	ERD10TJ124	120 k " "	2	S
R122,222,312, 331,335,340	ERD10TJ154	150 k " "	6	S
R115,215	ERD10TJ184	180 k " "	2	S
R126,132,226,232	ERD10TJ334	330 k " "	4	S
R11,24,25,112, 120,212,220	ERD10TJ474	470 k " "	7	S
R102,159,202,259	ERC18GJ105	1 M " Solid	4	S
R31,356	ERD10TJ330	33 " Carbon	2	S
R40	ERD10TJ561	470 " "	1	S
R32	ERD10TJ102	1 k " "	1	S

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
R46	ERD10TJ153	15 k 1/8W Carbon	1	S
R39	ERD10TJ473	47 k " "	1	S
R37	ERD10TJ104	100 k " "	1	S
R330	ERD10TJ563	56 k " "	1	S
R317	ERD50FJ1R2	1.2 1/2W "	1	S
		CAPACITORS (Values is in MICRO FARADS except P.P=PICO FARADS)		
C2	ECBT1H330JC	33 P 50V Ceramic(Cylinder)	1	
C9	ECBT1H180JC	18 P " "	1	
C138,238	ECBT1H561KV	680 P " "	2	
C29	ECBT1H223NY	0.022 " "	1	
C101,108,116,118, 120,125,201,208, 216,218,220,225, 322	ECFVD102KV	0.001 25V Semi-Conductor	13	
C311	ECFVD152KV	0.0015 " "	1	
C122,222	ECFVD222KV	0.0022 " "	2	
C307	ECFVD332KV	0.0033 " "	1	
C130,230,328,329,330	ECFVD472KV	0.0047 " "	5	
C127,227	ECFVD562KV	0.0056 " "	2	
C107,207	ECFVD682KV	0.0068 " "	2	
C28,64,331	ECFVD103MX	0.01 " "	3	
C123,223	ECFVD153MX	0.015 " "	2	
C14,16,19,31,34, 37,44,46,52	ECFVD223MX	0.022 " "	9	
C128,228	ECFVD333MX	0.033 " "	2	
C53,54,126,226	ECFVD393MX	0.039 " "	4	
C36	ECFVD473MX	0.047 " "	1	
C55,56	ECFVD563MX	0.056 " "	2	
C29,38,39,325,336	ECFVD683MX	0.068 " "	5	
C3	ECCD1H050C	5 P 50V Ceramic	1	
C11,18,24	ECCD1H070C	7 P " "	3	
C60	ECCD1H080C	8 P " "	1	
C17	ECCD1H080CC	8 P " "	1	
C21	ECCD1H100C	10 P " "	1	
C1	ECCD1H120K	12 P " "	1	
C23	ECCD1H150K	15 P " "	1	
C4,59	ECCD1H180K	18 P " "	2	
C10,33,41	ECCD1H470K	47 P " "	3	
C13	ECCD1H100CC	10 P " "	1	
C6	ECCD1H390KC	47 P " "	1	
C133,233	ECKD1H101KB	100 P " "	2	
C35,112,212	ECKD1H181KB	180 P " "	3	
C15	ECKD1H221KB	220 P " "	1	
C5,317	ECKD1H331KB	330 P " "	2	
C40	ECKD1H471KB	470 P " "	1	
C132,232	ECKD1H681KB	680 P " "	2	
C7	ECKD1H102MD	0.001 " "	1	
C20,303	ECKD1H103MD	0.01 " "	2	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
C103,110,	203,210,305			
	ECKD1H102ZF	0.001 50V Ceramic	5	
C25	ECQP1151JZ	150 P 100V Polypropylene	1	
C22	ECQP1221JZ	220 P " "	1	
C26	ECQP1361JZ	360 P " "	1	
C47	ECQP1681JZ	680 " "	1	
C27	ECQP1392JZ	0.0039 " "	1	
C335	ECQP1123JZ	0.012 " "	1	
C334	ECQV05563JZ	0.056 50V Epoxy	1	
C301	ECQV05104JZ	0.1 " "	1	
C333	ECQV05154JZ	0.15 " "	1	
C106,135,	206,235			
	ECQV05224JZ	0.22 " "	4	
C316	ECEA1CS172	1700 16V Electrolytic	1	
C136,236	ECEA1AS102	1000 10V "	2	S
C302	ECEA0JSS102	1000 6.3V "	1	
C115,124,	140,			
215,224,	240			
	ECEA50ZR1	0.1 50V "	6	
C129,229	ECEA50ZR22	0.22 " "	2	
C141,241	ECEA50ZR47	0.47 " "	2	S
C319	ECEA50ZR68	0.68 " "	1	S
C42,49,102,				
105,121,	202,205,			
209,211,	221,319			
	ECEA50Z1	1 " "	11	S
C306	ECEA50Z3R3	3.3 " "	1	S
C45,310	ECEA25Z4R7	4.7 25V "	2	S
C32,304,3	27,340			
	ECEA1HS100	10 50V "	4	S
C131,231	ECEA1CS330	33 16V "	2	S
C312	ECEA1AS470	47 10V "	1	S
C113,213	ECEA1HKR33	0.22 50V "	2	
C109,111,	117,119,			
217,219,	114,214,			
320,321,	323,324			
	ECEA1HK010	1 " "	12	
C309,341	ECEA0JSS101	100 6.3V "	2	
C30,134,2	34			
	ECEA1AS101	100 10V "	3	S
C314	ECEA1ASS221	220 " "	1	
C337	ECEA1CS331	330 16V "	1	S
C308,313	ECEA1ASS471	470 10V "	2	
C315,338	ECEA1CS471	470 16V "	2	S
C43	ECEA1AS221	220 10V "	1	S
C51	ECEA50ZR22	0.22 50V "	1	
C50	ECEA50ZR47	0.47 " "	1	S
C318	ECEA0JK330	33 6.3V "	1	
C332	ECEA0JS471	470 6.3V "	1	S
C302	ECEA0JSS471	470 " "	1	S
C339	ECEA1ES101	100 25V "	1	S

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
		CABINET PARTS		
K1	RYMXF20LXG1	Front Cabinet Ass'y (Metallic Brown)	1	
K1	RYMXF20LXG2	Front Cabinet Ass'y (Metallic Red)	1	
K1-1	RYHXF20LXG4	Handle Ass'y (Metallic Brown)	1	
K1-1	RYHXF20N2	Handle Ass'y (Metallic Red)	1	
K1-2	RKX244Z	Arm, Handle	2	
K1-3	RKX184Z	Spacer, Arm	2	
K1-4	RUS458Z	Spring, Arm	2	
K1-5	XTC3+8CFZ	Handle M'tg	2	
K2	RYFXF20LXG1	Rear Cabinet Ass'y (Metallic Brown)	1	
K2	RYFXF20LXG2	Rear Cabinet Ass'y (Metallic Red)	1	
K2-1	RJB2009Z4	Battery Holder (Metallic Brown)	1	
K2-1	RJB2009Z2	Battery Holder (Metallic Red)	1	
K2-2	QBN8009	Spring, Battery (-) Side	1	
K2-3	RJC210Z	Terminal, Battery (+) Side	1	
K2-4	RJC954Z	Spring, Battery (-, +) Side	1	
K3	RYQXF20LXG	Cassette Panel Ass'y	1	
K3-1	RUS472Z	Spring, Cassette Panel	1	
K3-2	RUS473Z	Spring, Cassette Panel	1	
K4	RYNXF20LXG1	Cover, Battery (Metallic Brown)	1	
K4	RYNXF20N2	Cover, Battery (Metallic Red)	1	
K5	XEAQCR228EAY	Telescopic Antenna	1	
K6	RBN606Z	Knob, Volume	3	
K7	RBN605Z	Knob, Tuning	1	
K8	RGM230Z	Speaker Net	2	
K9	RHG2017Z	Speaker Ring	2	
K10	RME293Z	Gear Plumb	1	
K11	RDG5702Z	Soft Guier	1	
K12	RHR1171Z	Cassette Lid Retainer	1	
K13	XTN3+60GFZ	Cabinet M'tg	4	
K14	XTN3+8FFX	Cabinet M'tg	3	S
K15	XTV3+8G	Soft Guier M'tg	2	
K16	XSN3+12BVS	Antenna M'tg	1	S
K17	RHR1171Y	Cassette Lid Retainer	1	
K18	RBN606Y	Knob, Band Selector	1	
K19	RBN488L	Knob, Fine Tuning	1	
		ELECTRICAL PARTS		
E1	RKE404Z1	Jack Board (Metallic Brown)	1	
E1	RKE404Z2	Jack Board (Metallic Red)	1	
E2	RDD581Z	Drum, Dial	1	
E3	XTV3+8G	Screw	14	
E4	XTN3+6B	Jack Board M'tg	1	S
E5	XTN3+8B	Dial Chassis M'tg	2	S
E6	XSN26+W8	Drum M'tg	1	
E7	RMD3078Z	Chassis Lock Spacer	1	
E8	RDZ05Z	Cord, Dial (95cm)	1	
E9	QBT1320	Spring, Dial	1	
E10	QMN8013	Shaft, Tuning	1	
E11	RZA1XF20FX1	Dial Chassis Ass'y (Metallic Brown)	1	
E11	RZA1XF20N2	Dial Chassis Ass'y (Metallic Red)	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
E11-1	QDP1477	Roller	1	
E11-2	QDP1684	Roller	2	
E11-3	RDY47Z	Shaft, Roller	3	
E12	XUC3FT	Circlip	2	S
E13	RJM142Z	Built-in Microphone	2	
E14	RZPXF20N	Pointer Ass'y	1	
E15	RZA2XF20N	Dial Holder Ass'y	1	
E16	RJP3G4Z	3 Pin Plug	2	
E17	RJP4G2Z	4 Pin Plug	1	
E18	RJP4G4Z	4 Pin Plug	1	
E19	RJP5G4Z	5 Pin Plug	1	
E20	RMY175Z	Heat Shink (IC4)	1	
E21	XSN3+10S	Heat Shink M'tg	2	S
E22	XWA3B	Washer	2	S
E23	RMC607Z	Shield Plate (IC1)	1	
E24	QBG1616	Cover, Microphone	2	
E25	RJT707Z	Contact	24	
E26	RHR1162Z	Guide Ring, LED	1	
E27	RHR163Z	Guide Ring, LED	1	
E28	RDR45Z	Roller	1	
E29	RBS198Z	Knob, Lever Switch	3	
E30	RHS590Z	Cover, Switch	3	
E31	RBC391Z	Knob, Muting	1	
E32	RMS12B	Speaker M'tg Spacer	6	
E33	RJP8D1Z	8 Pin Plug	1	
E34	RJS3L3Z	3 Pin, Socket	2	
E35	RJS4L3Z	4 Pin, Socket	1	
E36	XTV3+14GR	Screw	2	
E37	XTN3+50GR	Screw	1	
E38	XTV3+12GR	Screw, P. Circuit Board M'tg	3	
E39	RBC392Z	Knob, TPS	1	
E40	RHR1172Z	Shaft, Guide	1	
E41	XTS3+8G	Shaft, Guide M'tg	1	S
E43	RJS5L3Z	5 Pin, Socket	1	
E44	RJPS3B	3 Pin, Plug	1	
E45	RJP6G4Z	6 Pin, Plug	1	
E46	RJS6L3Z	6 Pin, Socket	1	
E47	RJS185Z	3 Pin, Socket	1	
		ACCESSORY		
	RD9499SXG	AC Adaptor	1	⚠
		PACKING MATERIALS		
	RPK1313Z	Gift Box	1	
	RPN9399Z	Pad Complete (L, R Side)	1	
	RPN9408Z	Pad Complete (Adaptor)	1	
	QPSK1109	Pad	1	
	XZB26X55A02	Polyethylene Cover	1	S
		PRINTED MATERIAL		
	RQX6861Z	Instruction Book	1	

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